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KINGSTON-AMARGOSA ORDER 3 SOIL STUDY

Prepared for the Department of the Interior
Bureau of Land Management's Desert Planning
Staff in response to Contract No. YA-512-
CT8-154.

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Major fieldwork for this soil survey was done in late 1978 and early 1979. Soil names and descriptions were approved in 1979. Unless otherwise indicated, statements in the publication refer to the conditions in the area at the time of the survey. This survey was made cooperatively by the Contractor, Bureau of Land Management, and the Soil Conservation Service.

The Final Field Review and Correlation for the Kingston-Amargosa Area was held in Las Vegas, Nevada during February 12-16, 1979 by the Soil Conservation Service, Bureau of Land Management and the contractor - Land Inventory & Development, Inc. (LID) and Claude L. Fly and Associates (CLFAA). Project Managers were Dr. Tracy L. Cox, President of LID, and Dr. Claude L. Fly, President of CLFAA. Party leader for the survey was Mr. Harmon Havens, formerly Senior Soil Correlator for the SCS in Mississippi, Alabama, and Arizona. Surveyors were Mr. Leland Larsen and Mr. Rudolph Schurig, formerly (now retired) with the SCS in Nevada and Arizona, respectively. The Contracting Officer's Area Representative (COAR) for the survey was Mr. Albert Endo of the Bureau of Land Managements's Desert Planning Staff, Riverside, California.

The field mapping was completed and correlated by the California State Correlator, Terry Cook, and Lou Langan, Regional Correlator from the Technical Service Center at Portland. Mr. Langan handled the final correlation conference in Portland, Oregon at the West Technical Center of the United States Department of Agriculture, Soil Conservation Service.

INTRODUCTION

Kingston-Amargosa Area

This area of about 500,000 acres lies south and east of the famous Death Valley National Monument area in the northeastern part of the California Desert (Figure 1) and has many washes and dry stream channels that slope toward the Amargosa River which eventually channels into the Death Valley depression. The southern boundary of the study area begins about 22 miles north of Baker, California. The soil inventory area is a rectangle (about 18 miles wide by 48 miles long) which lies in a northwesterly direction parallel to the California-Nevada border. It lies within Inyo and San Bernadino Counties with Ranges R9E-R16E and Townships T20N-T26N.

The area is accessible by paved road only along State Highway 127 which runs northward from Baker through the northwestern corner of the study area. A branch of this road extends eastward 10-12 miles to the Tecopah and Hot Springs area. Elsewhere, only unimproved roads and trails exist. A road extends from Valley Wells through the eastern tier of townships, with branches to the little town of Sandy and westward around the north edge of Kingston Mountain to connect with the paved road to Tecopah and Hot Springs area.

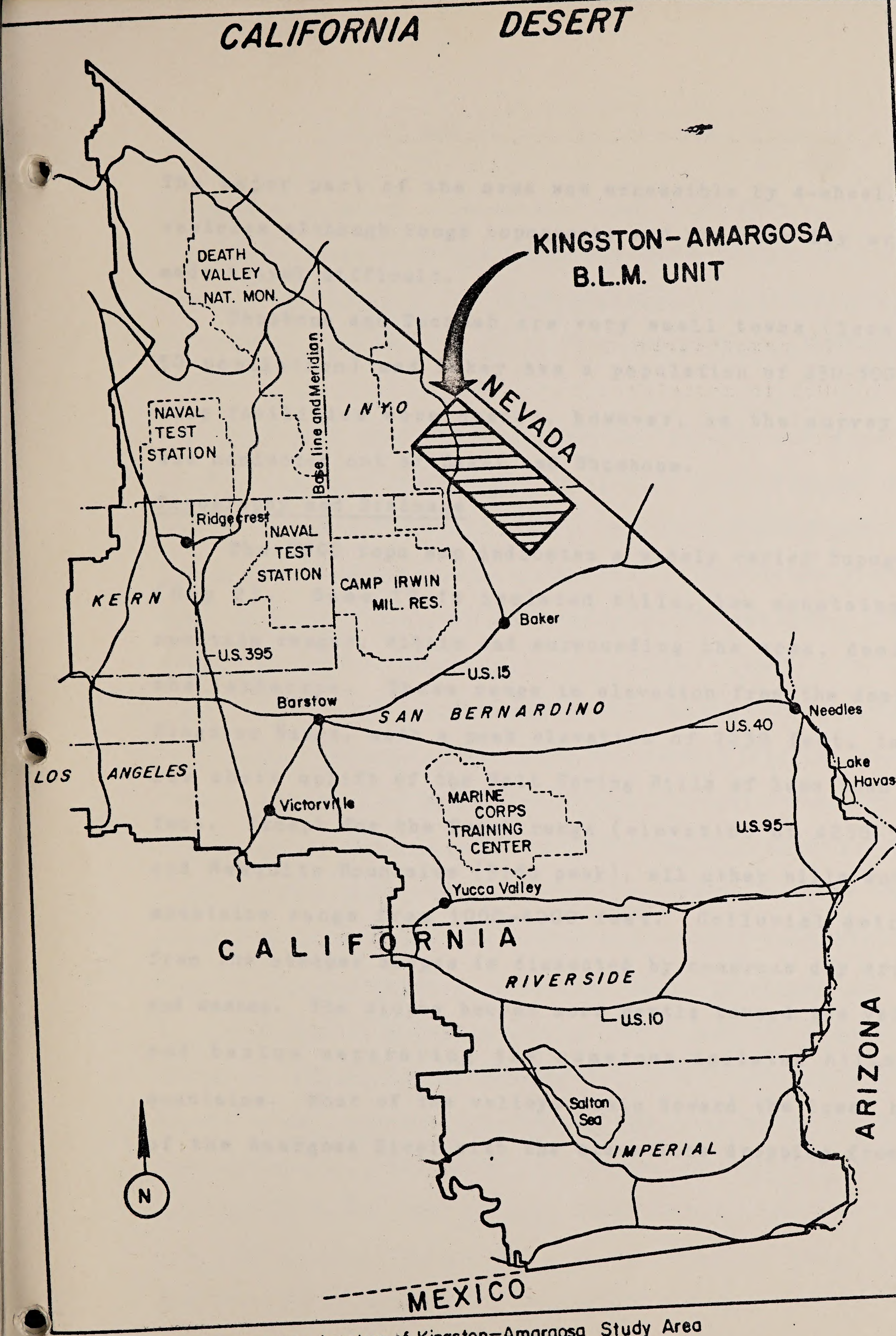


Figure 1. Approximate location of Kingston–Amargosa Study Area

The major part of the area was accessible by 4-wheel drive vehicles although rough topography and numerous dry arroyos made travel difficult.

Shoshone and Tecopah are very small towns (less than 50 population) and Baker has a population of 250-300. No camp facilities were needed, however, as the survey work was conducted out of Baker and Shoshone.

Topography and Drainage

The USGS topo map indicates a widely varied topography (Map 2). Some 13-14 isolated hills, low mountains and mountain ranges, within and surrounding the area, dominate the landscape. These range in elevation from the dominant Kingston Range, with a peak elevation of 7238 feet, to the low short uplift of the Salt Spring Hills of less than 2000 feet. Except for the Nopah range (elevation of 4238-5875) and Mesquite Mountains (5160 peak), all other hills and low mountains range from 1000-4000 feet. Colluvial detritus from the steeper slopes is dissected by numerous dry arroyos and washes. The slopes become more gentle toward the valleys and basins separating the numerous isolated hills and mountains. Most of the valleys drain toward the lower basin of the Amargosa River with the elevations dropping from the high valleys of 2000-3500 feet (California, Chicago, Mesquite and Shadow Valleys) to the extremely low Amargosa River (about 300 feet) which drains southwest then turns northwest toward the Death Valley depression.

Geology

A wide variety of geologic and reworked materials of Cambrian to Quaternary ages affect soils and vegetation in the Kingston-Amargosa area. Granites, gneisses, schists, quartzites, sandstones, limestones, dolomites and volcanic rocks and conglomerates contribute to rock exposures and thinly developed soils. Colluvial detritus and alluvial-colluvial deposits form washes, fans, terraces and stream valleys. Extensive gravelly and cobbly materials are discharged from steeper arroyos and washes onto the gentler valley slopes. Saline playas and lacustrine deposits, alluvium and local windwhipped sands add to the varied materials from which formed soils that were mapped.

Of the number of mines indicated on USGS quads on the eastern slopes of Ibex Hills, at the south end of Nopah range, into the Alexander Hills and on the north slopes of the Kingston range, only a few were active at the time of the survey.

Climate

There are no local weather stations within the mapped area. Because of the wide variation in topography and elevations considerable local or micro-climatic differences exist.

To obtain some basis for characterizing climate in the area, data were obtained from the NOAA Climatic Center, Asheville, North Carolina for weather stations in the California-Nevada deserts region. Comparisons were then made of elevation - precipitation relations and elevation - temperature relations.

Monthly and annual precipitation data were obtained for 15 stations ranging in elevation from -178 feet to +9645 feet. These all lie in the California-Nevada desert and intermountain regions between latitudes thirty-four degrees eight minutes North and thirty-seven degrees fifty-six minutes North and longitudes 114 degrees 37 minutes West and 119 degrees 14 minutes West.

Mean annual precipitation ranged from as low as 1.69 inches at 178 feet below sea level in Death Valley (Greenland Ranch) to 22.4 inches at the Ellery Lake station at 9645 feet elevation. The month of June was consistently the driest month of the year. The wettest month was December or January for the higher elevations, which received heavy winter precipitation, and March or August for many of the lower elevation stations. Regardless of the elevations or mean annual rainfall, the data show a fall or winter precipitation peak, a May-June drought with lower secondary peak in July-August and a minor secondary depression or dry period in September-October. Thus, even at the lower elevations some showers may occur in the July-August period.

Data evaluation showed fairly consistent relationship between mean annual precipitation (MAP) and elevation.

The probability of monthly precipitation (85 percent to 95 percent level) was analyzed for several stations ranging from 738-3825 feet in elevation. Here again the May-June low is followed by July-August rains totaling 1.41 inches at 738 feet to as much as 4.2 inches total for the two-month period at one location of only 913 feet elevation.

Data (isohyetals from National Oceanographic and Atmospheric Administrations) shows that the 25-year 24-hour precipitation in the Kingston-Amargosa Area can be as high as 3.0 inches around Kingston Peak. This may come in the form of a heavy thunderstorm, and such storms account for the numerous cobbly and gravelly washes characteristic of the area.

Mean monthly and mean annual temperatures for the 15 stations were evaluated. Mean Annual Temperatures correlated well with station elevations ranging from 43.6 degrees Farenheit for the Huntington Lake station at 7020 feet elevation to 76.9 degrees Farenheit in Death Valley at -152 feet elevation (Cow Creek). Mean July temperatures were 101.8 degrees Farenheit for the Death Valley station and 60.6 degrees Farenheit for the Huntington Lake station. Direction of exposures and local shadow effects of mountains and valleys cause variations among stations of equal elevation.

Not all the stations had data showing frost-free days. Ten stations were studied. Mean frost-free days range from 150 or less at higher elevations to 360-365 days in Death Valley. There is generally a consistent linear relation between frost-free days and elevation, but direction of exposure and local effects of mountain and valley configurations in air movement contribute to variations between locations of the same elevation.

Vegetation

The vegetation is typical of desert regions and is dominantly shrub communities with variations reflecting soils and climatic variations related to topography, parent material and elevations. The elevations range from 7200 feet on Kingston Peak to less than 1300 feet in the Amargosa River exit from the area. On the highland scattered juniper and pinyon pine occur and big sagebrush, bitterbrush and blackbrush is associated with mixed grasses and forbs.

At lower elevations several yucca species such as Joshua trees and Spanish bayonet, and cacti such as cholla, pear cactus and barrel cactus occur in association with numerous shrubs of which creosotebush, catclaw and white bursage are the more common.

Several map units show effects of high salt accumulations and have dominant salt tolerant species such as shadscale, four-wing saltbush and greasewood with grasses such as Alkali sacaton and Inland salt grass. Alkali seepweed, pickleweed and iodine bush may occur in the bare, highly saline-alkaline soils.

Wildlife

Despite the low rainfall, harsh desert climate and scanty desert vegetation, wildlife may exist in abundance and variety. Over 100 species of birds have been identified in the Mohave Desert region. Birds that may occur include Gambel quail, roadrunner, kingbird, whippoorwill, falcon, shrike, cactus wren, mourning cove and burrowing owl.

Numerous species of mammals have been identified. Among these are coyote, desert fox, jackrabbit, ringtail, mice, skunk, chuckawalla, kangaroo rat and, in the higher brushy areas, mule deer.

Many lizard types such as gecko, iguana and the collared lizard have been found. The desert rattlesnake, the sidewinder and the dryland tortise or terrapin are among species found in the region. Desert Bighorn Sheep were seen in the survey area.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soils are in the Kingston-Amargosa area of the California Desert, where they are located, what plants grow on them and how they can be used. As the soil scientists traveled over the country they observed the steepness, length, and shape of slopes, size and gradient of drainages, kinds of native plants, kinds of rocks and many facts about the soils. They dug many holes to expose soil profiles.

Soils that have profiles almost alike make up a soil series. Except for texture of the surface layer, the major horizons of all the soils of one series are similar in thickness, arrangement and other important characteristics. Each soil series is usually named for a town or other geographic feature near the place where that series was first observed and mapped. Arizo and ~~Bitter Spring~~ Gila are the names of two soil series. All of the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the natural undisturbed landscape.

Soils of one series can differ in texture of the surface soil and in slope and stoniness. On the basis of such differences a soil series is divided into phases. The name of a soil phase indicates a feature that affects management of soils and vegetation. For example, Arizo very gravelly loamy sand, saline is one of several phases with the Arizo series.

After a guide for classifying and naming the soils was worked out, the soil scientists drew boundaries of the individual soils on aerial photographs at one inch equals one mile (1:63,360). These photographs show roads, drainages, mountains, vegetation patterns and other details that help in drawing boundaries accurately. The soil map at the back of this survey was prepared from aerial photographs.

The areas shown on the soil map are called mapping units. On these maps prepared to be useful in management, a mapping unit is equivalent to a soil association, complex, or consociation. It is not practical on a map of this scale to show all the small, scattered bits of soil of some other kind (inclusion) that has been seen within an area that is dominantly of a recognized Order 3 mapping unit.

In preparing a map at the one inch per mile scale, the soil scientists have a problem of delineating areas where different kinds of soil are so intricately mixed or occur in such small individual tracts that it is not practical to show them separately on the map. They show such a mixture of soils as one mapping unit and call it a soil complex. Ordinarily a soil complex is named for the major kinds of soil in it, with the dominant soil named first. For example, the Bluepoint-Arizo complex 2 to 8 percent slopes..

Description of Soils

Soil Identification Legend

Soil Mapping Unit Descriptions

Approx. Acreage and Extent

Soil Series Classification

Soil Series Descriptions

Genetic Key

Soil Identification Legend

Identification Legend

Map Unit Symbol	Mapping Unit Name
100	Arizo gravelly loamy sand, 0 to 2 percent slopes
101	Arizo very gravelly loamy sand, 2 to 8 percent slopes
102	Arizo very gravelly loamy sand, saline, 0 to 2 percent slopes
103	Arizo extremely stony loamy sand, 2 to 15 percent slopes
104	Badland
105	Bitter-Arizo-Nickel complex, 2 to 8 percent slopes
106	Bitter-Cave-Nickel complex, 2 to 15 percent slopes
107	Blackmount-Arizo complex, 2 to 8 percent slopes
108	Blackmount-Nickel association, moderately sloping
109	Bluepoint-Arizo complex, 2 to 8 percent sopes
110	Bluepoint-Arizo-Cajon complex, 0 to 2 percent slopes
111	Gila loam, saline
112	Gila-Playa complex
113	Gothard Variant-Badland association
114	Knob Hill-Blackmount complex, 2 to 15 percent slopes
115	Nickel very gravelly sandy loam, 2 to 8 percent slopes
116	Nickel very gravelly sandy loam, 8 to 30 percent slopes
117	Nickel very stony sandy loam, 2 to 15 percent slopes
118	Nickel very stony sandy loam, 30 to 50 percent slopes
119	Nickel-Arizo association, strongly sloping
1	Nickel-Bitter very gravelly sandy loams, 15 to 30 percent slopes
121	Nickel-Grapevine association, gently sloping
122	Rock outcrop-Tecopa-St. Thomas complex, 30 to 75 percent slopes
123	Rock outcrop-St. Thomas complex, 30 to 75 percent slopes
124	Rock outcrop-Virgin Peak-Typic Haplustolls complex, 30 to 75 percent slopes
125	Tecopa-Rock outcrop complex, 15 to 60 percent slopes
126	Theriot-Rock outcrop complex, 30 to 75 percent slopes

Soil Mapping Unit Descriptions

100 -- Arizo gravelly loamy sand, 0 to 2 percent slopes.

This deep, excessively drained, coarse-textured, nearly level soil is on low alluvial fans and floodplains, mostly on low fans east of California Valley. Slopes are dominantly 1 to 2 percent. Native vegetation is creosotebush, yucca, cacti, eriogonum and white bursage with some catclaw, Mormon tea and annuals. Elevation ranges from 1600 to 4000 feet. The estimated average annual precipitation ranges from 4 to 8 inches, and the mean annual air temperature ranges from 60 to 70 degrees F. The estimated frost-free season ranges from 210 to 265 days.

Typically, the surface layer is very pale brown or pale brown gravelly loamy sand about 6 inches thick. The underlying layers are pale brown or very pale brown very gravelly loamy sand and the substrata is very gravelly sand. Thin strata of gravelly or very gravelly sandy loam may be present in some pedons. The soils are lightly to strongly effervescent, mildly to strongly alkaline, and are subject to occasional flooding.

Arizo gravelly loamy sand, 0 to 2 percent slopes, makes up about 55 percent of the unit with large areas of Arizo gravelly sandy loam included. Also included in this unit is approximately 5 percent of Nickel very gravelly sandy loam and 5 percent of Blackmount very gravelly sandy loam. Small narrow bands of very gravelly loamy sand or cobbly loamy sand, approximately 5 percent, are also included along the drainageways.

101 -- Arizo very gravelly loamy sand, 2 to 8 percent slopes.

This deep, excessively drained coarse-textured soil is on gently to moderately sloping alluvial fans and floodplains. Most areas are dissected by shallow drainages or small braided washes. Elevation ranges from 1400 to 4200 feet. The native vegetation includes creosotebush, catclaw, yucca, cacti, eriogonum, Mormon tea, white bursage, blackbrush and annuals. The estimated mean annual precipitation is 4 to 8 inches, the mean annual air temperature ranges from 55 to 70 degrees F., and the average frost-free season is 200 to 265 days.

Typically, the surface is covered with 30 to 80 percent gravel and cobbles. The surface layer is pale brown very gravelly loamy sand about 5 inches thick. The underlying material is pale brown or light yellowish brown very gravelly loamy sand and very gravelly sand to a depth of 60 inches. Thin strata of very gravelly sandy loam are present in some pedons. These soils average over 35 percent coarse fragments in the control section, are slightly to strongly effervescent, and are subject to seasonal flooding.

This soil unit consists of 60 percent Arizo very gravelly loamy sand, with large areas of Arizo gravelly loamy sand included. Other inclusions consist of 10 percent Arizo cobbly loamy sand and 5 percent of Nickel gravelly sandy loam. The percentage varies from one area to another, but Arizo very gravelly loamy sand is always the dominant soil.

Permeability of this Arizo soil is very rapid and available water capacity is very low. Surface runoff is very slow except during torrential storms. Erosion harzard is slight. The effective rooting depth is 60 inches or more.

This soil is used for rangeland, wildlife habitat watershed and recreation.

This map unit covers approximately 2,234 acres, or 0.4 percent of the area.

Capability unit VIIs nonirrigated.

103 -- Arizo extremely stony loamy sand, 2 to 15 percent slopes.

This deep, excessively drained, coarse-textured, gently to strongly sloping soil is on alluvial fans and floodplains. It is usually in the upper reaches of the drainageway near the lower slopes of the steep mountains. It is formed in recent alluvium from mixed sources. Most areas are highly dissected by shallow drainages or small washes. Native vegetation is creosotebush, catclaw, yucca, cacti, eriogonum, Mormon tea, white bursage, blackbrush and annuals. Elevation ranges from 2400 to 4800 feet, but is mostly 3000 to 4800 feet. The estimated average annual precipitation is 5 to 9 inches and the mean annual air temperature ranges from 53 to 60 degrees F. The estimated frost-free season ranges from 200 to 260 days.

Typically, the surface is covered with 50 to 90 percent cobblestones, stones and boulders. The surface layer is pale brown extremely stony loamy sand. The underlying material to a depth of 60 inches is pale brown stratified very cobbly loamy sand and very stony sand with a high percentage of coarse gravel. The soils are slightly to strongly effervescent, mildly to strongly alkaline, and are subject to occasional flooding.

Arizo extremely stony loamy sand makes up about 70 percent of the unit. Included in this unit is about 10 percent of a similar soil that has a very stony loamy sand surface and 10 percent of a similar soil with extremely bouldery loamy sand surface. The extremely bouldery soils are usually on the upper end of the washes and on the more sloping fans. Also included in the unit is about 5 percent of Arizo very gravelly loamy sand, and 5 percent of a soil that has an argillic horizon. This soil occurs at the toe slopes of hills adjacent to the drainages.

Permeability of this Arizo soil is very rapid, and available water capacity is very low. Surface runoff is very slow except during torrential storms. Erosion hazard is slight. The effective rooting depth is 60 inches or more.

This map upit is used for limited grazing, wildlife habitat watershed and recreation.

This unit covers approximately 10,063 acres, or 2.0 percent of the area.

Capability Unit VIIs.

Permeability of this soil is very rapid. Available water capacity is very low. Surface runoff is very slow except during convection storm periods and when the runoff from higher-lying soils collects on these soils. Erosion hazard is slight. The effective rooting depth is 60 inches or more.

This soil is used for limited grazing, wildlife habitat watershed and recreation.

This unit covers approximately 2,463 acres, or 0.5 percent of the survey area.

Capability Unit VIIs.

104 -- Badland

Badland consists of steep and very steep barren or nearly barren land that has resulted from severe erosion of lakebed sediments. This unit is on terraces above the more recent floodplain soils. Elevation ranges from 1350 to 1700 feet. The estimated average annual precipitation is about 4 to 6 inches. Average annual air temperature is near 67 degrees F. The average frost-free period is about 240 to 265 days.

The soil material consists of multicolored, calcareous, thinly bedded (stratified) clay, silty clay loam, sandy clay loam and silty soil materials.

Included in this unit is about 10 percent of Arizo very gravelly loamy sand, saline, and 5 percent of nearly level silty and shaly soils. Arizo soils are in the drainageways of the Badland unit and the silty and shaley soils are at the toe slope of the bare mounds. Also included in the unit is about 5 percent of Blackmount-like soils which occurs as caps over the erroded lakebed sediments.

Permeability of the soil is very slow, available water capacity is very low. Effective rooting depth is very shallow. Surface runoff is vey rapid and erosion hazard is severe.

This map unit is used for wildlife habitat watershed and recreation.

The unit covers approximately 26,928 acres, or 5.3 percent of the survey area.

Capability Unit VIII.

105 -- Bitter-Arizo-Nickel complex, 2 to 8 percent slopes.

This map unit is on dissected old alluvial fans. Slopes range from 2 to 8 percent. The native vegetation includes a sparse cacti and yucca. Elevations range from 1800 to 3600 feet. The estimated mean annual precipitation ranges from 4 to 8 inches. Mean annual air temperature ranges from 57 to 67 degrees F., and the frost-free season is 220 to 265 days.

Bitter very gravelly sandy loam, 2 to 8 percent slopes, is on the higher positions of the old fans, has about 95 percent gravel pavement on the surface, and makes up approximately 45 percent of the unit. Arizo very gravelly loamy sand, 2 to 5 percent slopes, usually occupies the lower parts of the fans and the dry braided washes, and makes up about 25 percent of the unit. Nickel very gravelly sandy loam,, 2 to 8 percent slopes on the breaks of the alluvial fans and washes, is intermixed with both the Bitter and Arizo soils and makes up about 20 percent. In some areas the suface layer of the Arizo and Nickel soils is very cobbly loamy sand and sandy loam and makes up about 5 percent of the unit.

Included in this mapping unit is about 5 percent of Cave gravelly sandy loam. It is gently sloping and is usually on the upper end of the fans.

The Bitter soil is deep, well-drained and is formed in mixed old alluvium. Typically 90 percent of the surface is covered with a varnished gravel pavement. The suface layer is pale brown very gravelly sandy loam about 2 1/2 inches thick. The subsoil is light brown and reddish yellow very gravelly sandy loam about 14 inches thick. The substratum is pinkish gray very gravelly loamy sand about 8 inches thick, over light gray very gravelly loamy sand to 60 inches. This soil is moderately and strongly alkaline and slightly to violently effervescent.

Permeability of the Bitter soil is moderatedly slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium and erosion hazard is slight.

Arizo soil is deep and excessively drained. It is formed in mixed alluvial materials. The surface layer is light brownish gray very gravelly loamy sand about 6 inches thick. The underlying material is pale brown and light yellowish brown very gravelly loamy sand and very gravelly sand to a depth of 60 inches. Thin strata of very gravelly sandy loam is present in some pedons. These soils average over 35 percent coarse fragments in the control section , are slightly to violently effervescent, and mildly to strongly alkaline and are subject to occasional flooding.

Permeability of the Arizo soil is very rapid. Available water capacity is very low. Surface runoff is very slow except during torrential storms. Erosion hazard is slight. The effective rooting depth is 60 inches or more. This soil is subject to flooding during convection storms.

Nickel is a deep and well-drained soil. It is formed in very gravelly alluvium high in calcium carbonate. Typically, the surface is covered with 65 percent gravel. The surface layer is a pale brown very gravelly sandy loam about 6 inches thick. The upper underlying material is a light brown and pale brown gravelly and very gravelly sandy loam 16 inches thick. The lower underlying material is a very pale brown and white very gravelly sandy loam that is weakly lime-cemented, and extends to a depth of 40 inches, and overlies pale brown very gravelly sandy loam and loamy sand to a depth of 60 inches or more. This soil is moderately to strongly alkaline, and strongly and violently effervescent.

Permeability of the Nickel soil is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more and runoff is medium. The erosion hazard in slight.

This complex of soils is used for rangeland, wildlife habitat watershed and recreation.

This unit covers approximately 9,415 acreas, or 1.8 percent of the area.

Capability Unit VIIs.

106 -- Bitter-Cave-Nickel complex, 2 to 15 percent slopes.

This complex of soils is on dissected old fans. Slopes range from 2 to 15 percent. The native vegetation is creosotebush, blackbrush, white bursage, cacti, Mormon tea, yucca, spiny horsebrush and plantain. Elevation ranges from 2000 to 3800 feet. The estimated mean annual precipitation ranges from 4 to 8 inches. Mean annual air temperature ranges form 55 to 66 degrees F., and the estimated frost-free season is 220 to 260 days.

Bitter very gravelly sandy loam, 2 to 8 percent slopes, is on the higher positions of the old fans, has about 95 percent gravel pavement on the surface, and makes up approximately 25 percent of the unit. Cave gravelly sandy loam, 2 to 5 percent slopes, is also high on the dissected old fans and makes up about 25 percent, and Nickel very gravelly sandy loam, 2 to 15 percent slopes, is on the side slopes of the drainages and makes up 25 percent of the unit.

Included in this mapping unit is about 10 percent of Arizo very gravelly loamy sand occurring along the drainages, 5 percent of Grapevine gravelly sandy loam on the lower fans, and 10 percent of a moderately fine-textured soil with an argillic horizon which occurs at the upper ends of the high fans. Also included in the unit is small areas of a soil similar to the Cave soils but having less than 15 percent of gravel in the control section.

Nickel is a deep and well-drained soil. It is formed in very gravelly alluvium. Typically, the surface is covered with 50 percent gravel. The surface layer is pale brown very gravelly sandy loam about 4 inches thick. The upper underlying material is light brown very gravelly fine sandy loam about 5 inches thick and overlies pinkish gray very gravelly sandy loam that is weakly lime-cemented and extends to a depth of 36 inches. The lower underlying material is light reddish brown and white stratified very gravelly loamy sand to a depth of 60 inches. This soil averages over 35 percent coarse fragments in the control section, is moderately to strongly alkaline and strongly to violently effervescent.

Permeability of the Nickel soil is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more, and runoff is medium. The erosion hazard is slight.

This complex of soils is used for rangeland, wildlife habitat watershed and recreation.

This unit covers approximately 51,875 acres, or 10.2 percent of the area.

Capability Unit VIIs.

107 -- Blackmount-Arizo complex, 2 to 8 percent slopes.

This map unit is on high dissected old fans and in washes that drain the nearby hills and mountains. Slopes are dominantly 2 to 8 percent but some small areas range up to 15 or 20 percent. The native vegetation is creosotebush, white bursage, desert trumpet, plantain, cacti and annuals. Elevation ranges from 2000 to 3200 feet. The estimated mean annual precipitation ranges from 5 to 8 inches. Average annual air temperature 56 to 65 degrees F., and the frost-free season is estimated to be 230 to 260 days.

This unit consist of 40 percent Blackmount very gravelly sandy loam, 2 to 8 percent slopes on the ridges of the high fans, and 30 percent Arizo very gravelly loamy sand, 2 to 6 percent slopes along the gently sloping washes and floodplains.

Included in this unit is about 15 percent of a soil similar to Blackmount very gravelly sandy loam but having a very cobbly surface, 5 percent of very cobbly loamy sand Arizo soils and 10 percent of Nickel very gravelly sandy loam. The Nickel soil is on the side slopes of the drainageways.

Blackmount soil is deep and well-drained and has thin argillic horizon. It formed in mixed alluvium including granite, schist, quartzite, limestone, dolomite and some volcanic rock. Typically, 90 percent of the surface is covered with a varnished gravel pavement. The surface layer is pale brown very gravelly sandy loam about 1 inch thick. The subsoil is yellowish red very gravelly sandy loam about 1 inch thick. The subsoil is yellowish red very gravelly sandy loam about 9 inches thick. The substratum is pale brown stratified very gravelly loamy sand or very cobbly sand to a depth of 60 inches. This soil is strongly to violently effervescent and moderately to strongly alkaline.

Permeability of the Blackmount soil is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium and erosion hazard slight.

The Arizo very gravelly loamy sand soil is deep and excessively drained. It is formed in very gravelly alluvium from mixed sources. Typically, the surface is covered with 60 percent gravel and cobbles. The surface layer is pale brown very gravelly loamy sand about 3 inches thick. The underlying layers are pale brown and very pale brown very gravelly loamy sand and very gravelly sand to a depth of 60 inches or more. This soil averages over 35 percent coarse fragments in the control section, is moderately alkaline and slightly to strongly effervescent. It is subject to occasional overflow.

Permeability of the soil is very rapid and available water capacity is very low. Effective rooting depth is 60 inches or more. Surface runoff is very slow except during torrential storms. Erosion hazard is slight.

These soils are used for rangeland, wildlife habitat watershed and recreation.

This map unit covers approximately 47,596 acres, or 9.3 percent of the survey area.

Capability unit VIIs, nonirrigated.

108 -- Blackmount-Nickel association. moderately sloping.

This map unit is on highly dissected old fans between the low washes and the nearby hills and mountains. Slopes are dominantly 2 to 15 percent but some side slopes range up to near 30 percent. The native vegetation is creosotebush, white bursage, desert trumpet, plantain, cacti and annuals. Elevation ranges from 1800 to 3000 feet. The estimated mean annual precipitation ranges from 5 to 8 inches. Average annual air temperature is 56 to 66 degrees F., and the frost-free season is estimated to be 230 to 260 days.

This unit is 60 percent Blackmount very gravelly sandy loam 2 to 8 percent slopes, and 20 percent Nickel very gravelly sandy loam 2 to 15 percent slopes. The Blackmount soils are on the ridges of the high fans and Nickel soils are along the side slopes of the washes.

Included in this unit is about 10 percent of a soil similar to Blackmount very gravelly sandy loam but having a very cobbly and stony sandy loam surface, and about 10 percent of very gravelly loamy sand Arizo soil. The Arizo soil is in the drainageways and washes.

Blackmount soils are deep, well-drained, very gravelly soils with a thin argillic horizon. They are formed in mixed alluvium including granite, schist, quartzite, limestone, dolomite and some volcanic rock. Typically, 90 percent of the surface is covered with a varnished gravel pavement. The surface layer is pale brown very gravelly sandy loam about 1 inch thick. The subsoil is yellowish red very gravelly sandy loam about 6 inches thick. The substratum is pale brown stratified very gravelly loamy sand or very cobbly loamy sand to a depth of 60 inches. These soils are strongly to violently effervescent and moderately to strongly alkaline.

Permeability of the Blackmount soil is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium and erosion hazard slight.

The Nickel very gravelly sandy loam soil is deep and well-drained. It formed in very gravelly alluvium from mixed sources. Typically, the surface is covered with 60 percent gravel and cobbles. The surface layer is pale brown very gravelly sandy loam about 16 inches thick. The lower underlying material is very pale brown and white very gravelly sandy loam about 18 inches thick and overlies pale brown very gravelly and cobbly sandy loam materials to a depth of 60 inches. This soil is moderately alkaline and slightly to violently effervescent.

Permeability of the soil is moderately slow and available water capacity is low. Effective rooting depth is 60 inches or more. Surface runoff is medium and errosion hazard is slight.

These soils are used for rangeland, wildlife habitat watershed and recreation.

This map unit covers approximately 21,009 acres, or 4.1 percent of the survey area.

Capability unit VIIs.

109 -- Bluepoint-Arizo complex, 2 to 8 percent slopes.

This map unit is on dessected old alluvial fans between the low smoother fans and the toe slopes of the steep hills and mountains. Slopes range from 2 to 8 percent. The native vegeatation includes creosotebush, white bursage, yucca, blackbrush, cacti and annuals. Elevation ranges from 2200 to 3800 feet. The average annual precipitation ranges from 5 to 8 inches, the estimated mean annual air temperature from 56 to 63 degrees F., and the average frost-free season is 225 to 250 days.

Bluepoint loamy sand is on the ridges of alluvial fans and makes up about 60 percent of the unit. Arizo very gravelly loamy sand is in the drainageways and makes up about 25 percent of the unit. Included in this unit is about 15 percent of loamy sand and sand soil materials overlying very gravelly sandy soil materials at 24 to 40 inches.

The Bluepoint soil is deep and somewhat excessively drained. It formed in mixed sandy alluvium from quartzite, sandstone, schist and limestone. Typically, the surface layer is light brown loamy sand about 7 inches thick. The upper underlying layer is also light brown loamy sand to about 36 inches. The lower layer is a reddish yellow loamy sand to about 56 inches that is weakly lime-cemented at 48 to 56 inches. Below 56 inches is a light brown loamy sand to 60 inches or more. The soil is moderately alkaline, and strongly and violently effervescent.

Permeability of the Bluepoint soil is rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is very slow and the soil blowing hazard is moderate.

The Arizo soil is deep and excessively drained. It formed in mixed gravelly alluvium derived from quartzite, gneiss, limestone, sandstone and schist. Typically, the surface layer is light brownish gray very gravelly loamy sand about 6 inches thick. The underlying layer is light yellowish brown and light brown very gravelly loamy sand to a depth of 60 inches or more. This soil is moderately alkaline and slightly to violently effervescent.

Permeability of the Arizo soil is very rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Surface runoff is very slow. It is subject to occasional overflow during torrential storms. Erosion hazard is slight.

These soils are used for rangeland, wildlife habitat watershed and recreation.

This unit covers approximately 10,853 acres, or 2.1 percent of the area.

Capability unit VIIs.

110 -- Bluepoint-Arizo-Cajon complex, 0 to 2 percent slopes.

This complex of soils is on low fans and floodplains. Slopes are mostly 1 to 2 percent. The native vegetation is creosotebush, white bursage, blackbrush, yucca, Indian ricegrass, stipa and cacti. Elevation ranges from 2200 to 3000 feet. The average annual precipitation ranges from 5 to 7 inches and the estimated mean annual air temperature ranges from 60 to 63 degrees F. The frost-free period is 230 to 250 days.

Bluepoint loamy sand is on the low ridges of old fans and makes up about 40 percent of the unit. Arizo gravelly loamy sand is in the washes, drainageways and low fans and makes up 30 percent, and Cajon loamy sand makes up 20 percent of the unit. The Cajon soil is on the low alluvial fans and floodplains and is intermixed with the Bluepoint and Arizo soils.

Included in this unit is about 8 percent of a soil similar to the Bluepoint soils. It has a buried Bt horizon at about 24 to 36 inch depth. Also included in the unit is about 2 percent of Blackmount very gravelly sand loam on the higher ridges of the old fans.

The Bluepoint soil is deep, somewhat excessively drained and coarse textured. It formed in sandy mixed alluvium from quartzite, sandstone, schist and limestone. Typically, the surface layer is light brown loamy sand about 7 inches thick. The upper underlying material is also light brown loamy sand to a depth of 36 inches. The lower underlying material is a reddish yellow loamy sand to a depth of 56 inches with weak cementation at 48 to 56 inches. Below 56 inches is a light brown loamy sand to 60 inches or more. This soil is moderately alkaline and strongly to violently effervescent.

Permeability of the Bluepoint soil is rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is very slow and the soil blowing hazard is moderate.

Arizo soil is deep and excessively drained. It formed in mixed very gravelly alluvium derived from quartzite, gneiss, limestone, sandstone and schist. Typically, the surface layer is very pale brown gravelly loamy sand about 8 inches thick. The underlying layer is very pale brown very gravelly loamy sand and very gravelly sand to a depth of 60 inches. This soil is moderately alkaline and slightly to strongly effervescent.

Permeability of the Arizo soil is very rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Surface runoff is very slow. It is subject to occasional overflow during torrential storms. Erosion hazard is slight.

The Cajon soil is deep and somewhat excessively drained. It formed in sandy mixed alluvium from quartzite, sandstone, schist, limestone and granite. Typically, the surface layer is pale brown loamy sand about 3 inches thick with weak platy structure. The underlying layer is pale brown loamy sand about 9 inches thick. The next layer is pale brown gravelly loamy sand to a depth of 45 inches, and is underlain by light yellowish brown very gravelly loamy sand to a depth of 60 inches. This soil is slightly to strongly effervescent and moderately alkaline.

Permeability of the Cajon soil is rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is very slow. The soil blowing hazard is moderate.

These soils are used for rangeland, wildlife habitat watershed and recreation.

This unit covers approximately 10,570 acres, or 2.1 percent of the area.

Capability unit VII, nonirrigated.

111 - Gila silt loam, saline

This is a deep, medium-textured and well-drained soil. It occurs on low alluvial fans and floodplains of the Chicago Valley. Slopes are 0 to 2 percent and are smooth with only limited shallow stream channels in the unit. The native vegetation is fourwing saltbush, alkali seepweed and mesquite. Elevation ranges from 1500 to 2200 feet. The estimated average annual precipitation is about 4 to 7 inches. The average annual air temperature is 65 to 67 degrees F. The estimated average frost-free season is 240 to 265 days.

Gila silt loam, saline, makes up 60 percent of the unit and includes areas of Gila fine sandy loam, saline, and Gila loam saline. Included in this unit is about 15 percent of Gila like soils with a buried B horizon at 30 to 50 inches, and 15 percent of a moderately fine textured soil that overlies moderately fine and fine-textured lakebed sediments which are high in gypsum. Also included in the unit is about 10 percent of a soil similar to the Gila soils but having a sandy loam control section. All of these soils are on the nearly level floodplains and low fans.

Gila silt loam, saline, is a deep and well-drained soil. It formed in recent mixed alluvium from mixed sources. Typically, the surface layer is light yellowish brown silt loam about 5 inches thick that is thinly stratified. The underlying material is light yellowish brown stratified silt loam, loam and fine sandy loam to a depth of 60 inches or more. The silt loam and loam textures are dominant. The soil is moderately to strongly alkaline and strongly to violently effervescent. These soils are subject to flooding.

Permeability of this soil is moderate, and available water capacity is moderate to high. Surface runoff is slow except during torrential storms. Soil blowing hazard is moderate. Effective rooting depth is 60 inches or more.

This unit is used for rangeland, wildlife habitat watershed and recreation.

The unit covers about 6,652 acres or 1.3 percent of the survey area.

Capability Class VIIs, nonirrigated.

112 - Gila silt loam, saline-playa complex

This map unit is on the low fans and floodplains of the Amargosa River and Chicago Valley. The soils in this unit formed in recent alluvium and lake sediments from mixed sources including limestone, dolomite, schist, gneiss, quartzite and basic igneous rock. Slopes are 0 to 2 percent. The native vegetation is fourwing saltbush, alkali seepweed and salt grass (Distichlis spicata var. divaricota). Elevation ranges from 1320 to 1650 feet. The average annual precipitation ranges from 4 to 6 inches, the estimated mean annual air temperature from 66 to 69 degrees F., and the average frost-free period is about 240 to 265 days.

Gila silt loam, saline, is on the level or nearly level broad floodplain positions and makes up about 70 percent of the unit, and small playas make up about 20 percent. Included in this unit is about 5 percent of Arizo very gravelly loamy sand which occurs on the higher portions of the floodplains as fans from the side washes, and 5 percent of wet soils adjacent to the playas that are high in salts.

Gila silt loam, saline, is a deep, well-drained and medium-textured soil. This soil has a high salt content and formed in mixed recent alluvium. Typicaly, the surface layer is pale brown silt loam about 11 inches thick. The underlying layers are pale brown and light brown stratified silt loam, loam and sandy loam soil materials to a depth of 43 inches. The underlying material at 43 to 60 inches is a pale brown loamy sand. This soil is strongly effervescent and very strongly alkaline.

Permeability of this soil is moderate. Available water capacity is moderate to high. Effective rooting depth is 60 inches or more. Runoff is slow and soil blowing hazard is moderate.

The playas in this unit are essentially barren, flat, generally dry salty areas. They may be covered with shallow water for sort periods of time.

Permeability of this soil is very slow, runoff is very slow. Available water capacity is probably low. Erosion hazard is slight.

This map unit is used for rangeland, wildlife habitat watershed and recreation.

This unit covers approximately 4,235 acres, or about 0.8 percent of the area.

Capability unit VIIs, VIII for playas.

113 - Gothard/variant-Badland association

This soil association is on the level and nearly level alkali flats. It occurs in the basin of an old lakebed in the California Valley. One small area occurs on a low terrace above the Chicago Valley foodplain just east of Tecopa. Slopes are 0 to 2 percent. The native vegetation is fourwng saltbush, eriogonam, alkali seepweed, spiny horsebrush and annual weeds. Elevation ranges from 1400 to 2500 feet. The estimated mean annual air temperature ranges from 62 to 68 degrees F, and the mean annual precipitation is about 4 to 7 inches. The frost-free season is about 235 to 265 days.

Gothard variant is on the low nearly level alkali flats and makes up about 60 percent of the unit, and Badland which occurs in the southern part of the unit makes up about 20 percent.

Included in the unit is about 10 percent of a strongly developed fine-textured Natrargid underlain by gravelly fan deposits, 5 percent of gravelly old alluvium over lakebed sediments which occurs around the outer edges of the unit, and about 5 percent of Arizo very gravelly loamy sand occurring in the low washes that dissect the unit.

The Gothard variant is a deep, somewhat poorly drained soil that has an argillic horizon with more than 15 percent exchangeable sodium. This soil formed in old lake sediments and fan deposited alluvium. Typically, the surface layer of the Gothard variant is a light gray loam about 2 inches thick. The subsoil is very pale brown loam and pale brown clay loam about 9 inches thick. The underlying material is light gray, light brownish gray and white clay loam and clay to a depth of 60 inches. This soil is violently effervescent ann strongly to very strongly alkaline.

Permeability is slow. Available water capacity is low. Effective rooting depth is 30 to 50 inches. Runoff is slow and the erosion hazard is slight.

Badland consist of moderately steep and steep, barren or nearly barren land resulting from severe erosion of lakebed sediments. Badland is on the terraces and terrace escarpments above the alkali flats and the more recent floodplain soils. It consists of multicolored, calcareous, thinly bedded silty and clayey soil materials.

Permeability of this soil is very slow, available water capacity is very low. Surface runoff is very rapid and erosion hazard is severe.

This map unit is used for rangeland, wildlife habitat watershed and recreation.

The unit covers approximately 2,557 acres, or 0.5 percent of the survey area.

Capability unit - Gothard variant VIIs, Badland VIII.

114 - Knob Hill-Blackmount complex, 2 to 15 percent slopes

This map unit is on dissected alluvial fans and low hills. Slopes are concave and range from 2 to 15 percent. The native vegetation is fourwing saltbush, desert holly, creosotebush, plantain, shadscale, white bursage and desert trumpet. Elevation ranges from 1400 to 2200 feet but is dominantly 1400 to 2000 feet. The estimated mean annual air temperature is about 66 degrees F, and the average frost-free period ranges rom 241 to 250 days.

Knob Hill gravelly loamy sand, 2 t 15 percent slopes, is on the higher positions of the old fans and makes up about 65 percent of the unit. Blackmount very gravelly sandy loam, 2 to 8 percent slopes, is on the gently sloping ridge tops and on the toe slopes of the hills and makes up about 25 percent of the unit.

Included in this mapping unit is about 10 percent of Arizo gravelly loamy sand which occurs along the drainageways.

Knob Hill soil is deep and somewhat excessively drained. Typically, 30 to 40 percent of the surface is covered with gravel. The surface layer is pale brown gravelly loamy sand about 2 inches thick. The subsoil is brown light sandy loam about 11 inches thick, which is underlain by pale brown gravelly loamy sand that is weakly lime-cemented and about 13 inches thick. The underlying material is light yellowish brown and pale brown stratified loamy sand and very gravelly loamy sand to a depth of 60 inches or more. This soil is moderately to very strongly alkaline and slightly to violently effervescent. In some areas the surface layer is a sandy loam.

Permeability of Knob Hill soils is moderately rapid. Available water capacity is very low. Surface runoff is very slow. The effective rooting depth is 60 inches or more and erosion hazard is slight.

Blackmount soil is deep and well-drained and has a thin argillic horizon. It formed in mixed alluvium from granite, schist, quartzite and limestone with some influence from volcanic rock. Typically 80 percent of the surface is covered with gravel pavement. The surface layer is pale brown very gravelly sandy loam about 1 inch thick. The subsoil is yellowish red very gravelly sandy loam about 9 inches thick. The substratum is pale brown stratified very gravelly loamy sand or very cobbly sand to a depth of 60 inches or more. This soil is strongly to violently effervescent and moderately to strongly alkaline.

Permeability of the Blackmount soil is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium and erosion hazard slight.

This unit is used for limited grazing, wildlife habitat watershed and recreation.

This unit covers approximately 2,646 acres, or about 0.5 percent of the area.

Capability Unit VIIs, nonirrigated.

115--Nickel very gravelly sandy loam, 2 to 8 percent slopes.

This map unit is on dissected old alluvial fans midway between the low fans and the steep and very steep mountains. Slopes are dominantly 2 to 8 percent. The native vegetation is creosotebush, yucca, cacti, white bursage, eriogonum, blackbrush and annuals. Elevation ranges for 2400 to 3600 feet. The estimated mean annual air temperature ranges for 56 to 63 degrees F. The esitmated mean annual precipitation is 5 to 8 inches, and the frost-free season is about 230 to 260 days.

Nickel very gravelly sandy loam, 2 to 8 percent slopes, is on the higher parts of the fans and makes up about 70 percent of the unit. Included in the unit is about 15 percent of Arizo very gravelly loamy sand in the drainageways and lower parts of the fans, 10 percent of Nickel soils with cobbly sandy loam surfaces, and 5 pecent of Grapevine gravelly sandy loam on the lower and smoother slopes.

Nickel soil is deep and well-drained. It formed in very gravelly calcareous old alluvium. Typically, 70 percent of the surface is covered with gravel pavement. The surface layer is pale brown very gravelly sandy loam about 2 inches thick. The subsurface layer is pale brown gravelly sandy loam about 20 inches thick. The upper substratum is very pale brown and white very gravelly sandy loam about 18 inches thick. The lower substratum is pale brown very gravelly and cobbly sandy loam to a depth of

60 inches or more. This soil is moderately to strongly alkaline, and strongly and violently effervescent throughout and may have weakly lime-cemented layers.

Permeability is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the erosion hazard slight.

This soil is used for rangeland, wildlife habitat watershed and recreation.

The map unit covers approximately 26,498 acres, or 5.2 percent of the area.

Capability Unit VIIs, nonirrigated.

116--Nickel very gravelly sandy loam, 8 to 30 percent slopes

This map unit is on strongly dissected old alluvial fans near the toe slopes of the very steep mountians. Slopes are dominantly 8 to 30 percent. The native vegetation is creosotebush, yucca, cacti, white bursage, eriogonum, blackbrush and annuals. Elevation ranges for 2400 to 4000 feet. Mean annual air temperature ranges for 54 to 63 degrees F. The estimated precipitation is 5 to 9 inches, and the frost-free season is about 220 to 260 days.

Nickel very gravelly sandy loam, 8 to 30 percent slopes, is on the convex slopes and makes up about 50 percent of the unit. Included in this unit is about 30 percent Nickel gravelly sandy loam and about 10 percent Nickel cobbly sand loam.. Also included in the unit is about 5 percent of Cave soils which occur intermittently on the ridge crests, and 5 percent of Arizo very gravelly loamy sand soils along the small drainages.

Nickel soil is deep and well-drained. It formed in very gravelly, moderately coarse-textured calcareous old alluvium. Typically, 60 to 70 percent of the surface is covered with coarse fragments consisting of gravel and cobble. The surface layer is very pale brown very gravelly sandy loam about 2 inches thick. The subsoil is light yellowish brown gravelly sandy loam about 6 inches thick. The upper underlying material is light yellowish brown very gravelly sndy loam about 12 inches thick underlain by light yellowish brown and white very gravelly sandy loam that is weakly lime-cemented and extends to a depth of 42 inches. The lower underlying material is very pale brown very gravelly coarse sandy loam to a depth of 60 inches or more. The soil is moderately to strongly alkaline, and strongly to violently effervescent throughtout and may have weakly lime-cemented layers.

Permeability is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the erosion hazard slight.

This soil unit is used for rangeland, wildlife habitat watershed and recreation.

This map unit covers approximately 8,222 acres, or 1.6 percent of the area.

Capability unit VII, nonirrigated.

117--Nickel very stony sandy loam, 2 to 15 percent slopes.

This unit is on dissected old alluvial fans midway between the steep mountains and hills and the low alluvial fans. Slopes are dominantly 2 to 15 percent. The native vegetation is creosotebush, yucca, cacti, white bursage, eroigonam, Mormon tea, blackbrush and annuals. Elevation ranges for 2400 to 4000 feet. The estimated mean annual air temperature ranges from 54 to 63 degrees F. The estimated mean annual precipitation is 5 to 9 inches, and the frost-free season is about 220 to 260 days.

Nickel very stony sandy loam, 2 to 15 percent slopes, is on the convex slopes and makes up about 75 percent of the unit. Included in this unit is about 15 percent of Arizo very gravelly loamy sand which occurs in the broad swales and along the drainageways, and 10 percent Nickel very cobbly sandy loam surface occurring intermittently on the ridge crests.

Nickel soil is deep and well-drained. It formed in very gravelly calcareous old alluvium. Typically, 70 percent of the surface is covered with varnished gravel pavement. The surface layer is pale brown very stone sandy loam about 2 inches thick. The underlying layer is pale brown gravelly sandy loam about 20 inches thick. The upper substratum is very pale brown and white very gravelly sandy loam about 18 inches thick. The lower substratum is pale brown very gravelly and cobbly sandy loam to a depth of 60 inches. This soil is moderately to strongly alkaline, and strongly and violently effervescent throughtout and may have weakly lime-cemented layers.

Permeability is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the erosion hazard slight.

This soil is used for rangeland, wildlife habitat watershed and recreation.

This map unit covers approximately 9,184 acres, or 1.8 percent of the area.

Capability unit VIIs, nonirrigated.

118--Nickel very stony sandy loam, 30 to 50 percent slopes.

This map unit is on strongly dissected old alluvial fans at the toe slopes of the very steep mountains. Slopes are dominantly 30 to 40 percent, but range from 25 to 50 percent. The native vegetation is creosotebush, yucca, cacti, white bursage, eriogonum, blackbrush and annuals. Elevation ranges for 2400 to 4000 feet. The estimated mean annual air temperature ranges from 54 to 63 degrees F. The mean annual precipitation is 5 to 9 inches (estimated), and the frost-free season is about 220 to 260 days.

Nickel very stony sandy loam on the convex slopes makes up about 45 percent of the unit, Nickel stony sandy loam 30 percent, and Nickel very gravelly sandy loam are on concave positions and make up about 20 percent.

Included in the unit are about 5 percent of Cave soils which occur intermittently on the ridge crests, and 5 percent of the Arizo cobbly sandy loam soils along the small drainages.

Nickel soil is deep and well-drained. It formed in very gravelly moderately coarse-textured calcareous old alluvium. Typically, 60 to 70 percent of the surface is covered with rock fragments consisting of gravel, cobble and 10 to 15 percent stones. The surface layer is pale brown very stony sandy loam about 3 inches thick. The subsurface is pale brown very gravelly sandy loam about 9 inches thick. The upper underlying material is a very pale brown and white weakly cemented very gravelly sandy loam and is about 24 inches thick. The lower underlying material is pale brown and white very gravelly coarse sandy loam to a depth of 60 inches or more. This soil is moderately to strongly alkaline, and strongly to violently effervescent throughout.

The Nickel stony sandy loam and very gravelly sandy loam soils are similar to Nickel very stony sandy loam, but have fewer stones in the surface layer.

Permeability is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the erosion hazard slight.

These soils are used for rangeland, wildlife habitat watershed and recreation.

This map unit covers approximately 623 acres, or 0.1 percent of the area.

Capability unit VII, nonirrigated.

119--Nickel-Arizo association, strongly sloping.

This map unit is on dissected old alluvial fans at the toe slopes of the steep mountains and hills. Slopes are dominantly 2 to 15 percent. The native vegetation is creosotebush, Mormon tea, yucca, cacti, white bursage, eriogonam, blackbrush and annuals. Elevation ranges from 2400 to 4000 feet. The estimated mean annual air temperature ranges from 54 to 63 degrees F. The estimated mean annual precipitation is 5 to 9 inches, and the frost-free season is about 220 to 260 days.

Nickel very gravelly sandy loam, 2 to 15 percent slopes, in on the convex slopes and makes up about 70 percent of the unit. Arizo very gravelly loamy sand, 2 to 8 percent slopes, is in the drainageways and broad swales and makes up 20 percent of the unit.

Included in the unit is about 5 percent of Arizo soils with a gravelly sandy loam surface, and 5 percent of Grapevine gravelly sandy loam soils occurring on the old fans.

Nickel soil is deep and well-drained. It formed in very gravelly calcareous old alluvium. Typically, 70 percent of the surface is covered with rock fragments consisting of gravel, cobble and stones. The surface layer is very pale brown very gravelly sandy loam aobut 2 inches thick. The underlying layer is light yellowish brown very gravelly sandy loam about 6 inches thick.

The upper substratum is light yellowish brown very gravelly sandy loam about 12 inches thick, underlain by light yellowish brown and white very gravelly sandy loam that is weakly lime-cemented and extends to a depth of 42 inches. The lower substratum is very pale brown very gravelly coarse sandy loam to a depth of 60 inches or more. This is moderately to strongly alkaline, and strongly and violently effervescent throughout and may have weakly lime-cemented layers.

Permeability is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and the erosion hazard is slight.

The Arizo very gravelly loamy sand soil is deep and excessively drained. It formed in very gravelly mixed alluvium. Typically, 70 percent of the surface is covered with gravel and some cobble. The surface layer is pale brown very gravelly loamy sand about 5 inches thick. The underlying material is pale brown stratified very gravelly loamy sand and very gravelly sandy to a depth of 60 inches or more. This soil is moderately alkaline and strongly and violently effervescent and is subject to occasional flooding.

Permeability of the Arizo soil is very rapid and available water capacity is very low. Effective rooting depth is 60 inches or more. Surface runoff is very slow except during torrential storms. Erosion hazard is slight.

These soils are used for rangeland, wildlife habitat watershed and recreation.

This map unit covers approximately 6,766 acres, or 1.3 percent of the area.

Capability unit- Arizo VIIs.

Capability unit- Nickel VIIe.

120 - Nickel-Bitter very gravelly sandy loams, 15 to 20 percent slopes

This soil complex is on high strongly dissected old fans and foothills. Slopes are dominantly 15 to 30 percent but range from 10 to 35 percent. The native vegetation is mainly creosotebush, white bursage, desert trumpet, desert holly, Mormon tea, scattered cacti and plantian. Elevation ranges from 2400 to 3200 feet. The estimated average annual precipitation ranges from 5 to 8 inches, the average annual air temperature is 56 to 63 degrees F, and the average frost-free season is estimated to be 230 to 260 days.

This unit is 45 percent Nickel very gravelly fine sandy loam and 35 percent Bitter very gravelly sandy loam. The Nickel soil is on the side and toe slopes of the fans, and Bitter very gravelly sandy loam is on concave side slopes and convex ridge crests. The components of this unit are intricately intermingled.

Included in this unit is about 10 percent of Arizo very gravelly loamy sand which occurs along the drainageways and 10 percent of Bitter Spring very gravelly sandy loam intermixed with the Bitter soil.

Nickel soil is deep and well-drained. It formed in very gravelly calcareous mixed alluvium. Typically, the surface layer is pale brown very gravelly sandy loam about 4 inches thick. The underlying material is light brown very gravelly fine sandy loam about 5 inches thick. This is underlain by pinkish gray very gravelly sandy loam, high in lime, to a depth of 36 inches. The lower unerlying material is light reddish brown very gravelly loamy sand to a depth of 60 inches or more. These soils are moderately to strongly alkaline and strongly and violently effervescent.

Permeability of the Nickel soil is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid and erosion hazard slight.

Bitter soils are deep and well-drained. They formed in very gravelly mixed alluvium. Typically, the surface is covered with 80 percent gravel, cobble and stone. The surface layer is pale brown very gravelly sandy loam about 2 inches thick. The subsoil is light brown very gravelly light sandy clay loam about 9 inches thick. The substratum is light gray very gravelly light sandy clay loam and very gravelly sandy loam to a depth of 60 inches. These soils are slightly to violently effervescent and are moderately and very strongly alkaline.

Permeability of the Bitter soil is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium to rapid and erosion hazard is slight.

These soils are used for rangeland, wildlife habitat watershed and recreation.

This map unit covers approximately 9,590 acres, or 1.9 percent of the area.

Capability unit- Bitter VIIs.

Capability unit- Nickel VIIe.

121 - Nickel-Grapevine association, gently sloping

This soil association is mainly on the smooth valley slopes and gently sloping old alluvial fans in the eastern part of the survey area. Slopes are dominantly 2 to 5 percent but include some areas of 1 percent slopes. The native vegetation is creosotebush, yucca (Joshua tree and Spanish bayonet), cacti, eriogonum, white bursage, some Mormon tea, catclaw and annuals. Elevation ranges from 2400 to 3600 feet. The estimated mean annual air temperature ranges from 57 to 63 degrees F, and the mean annual precipitation is about 5 to 8 inches. The frost-free season is about 225 to 250 days.

Nickel very gravelly sand loam, 2 to 5 percent slopes, is on the higher fan positions and makes up about 45 percent of the unit. Grapevine gravelly fine sandy loam, 1 to 3 percent slopes, is on the lower fans with lesser slopes and makes up about 40 percent. The remaining 15 percent consists of long narrow bands of Arizo very gravelly loamy sand in the swales and drainageways.

Nickel is a deep and well-drained soil. It formed in very gravelly calcareous old alluvium. Typically, 70 percent of the surface is covered with gravel and some cobble. The surface layer is pale brown very gravelly sandy loam about 6 inches thick. The subsurface is pale brown gravelly sandy loam about 16 inches thick. The upper underlying material is very pale brown and white very gravelly sandy loam that is weakly lime-cemented, has over 15 percent calcium carbonate and extends to a depth of 40 inches. The lower underlying material is very gravelly loamy sand to a depth of 60 inches or more. This soil is moderately to strongly alkaline, and strongly and violently effervescent.

Permeability is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium. The erosion hazard is slight due to the very gravelly surface cover.

Grapevine is a deep and well-drained soil. This soil formed in gravelly calcareous mixed alluvium. Typically, the surface layer is very pale brown gravelly fine sandy loam about 7 inches thick. The subsoil is light yellowish brown gravelly sandy loam about 14 inches thick. The upper underlying material is pink and light brown gravelly light loam with more than 15 percent calcium carbonate and is about 39 inches thick. The lower underlying material is light yellowish brown sand loam and decreases in percent of calcium carbonate. This soil is moderately to strongly alkaline and strongly and violently effervescent.

Permeability is moderate, available water capacity is medium and effective rooting depth is 60 inches or more. Runoff is medium. The erosion hazard is slight.

This soil association is used for rangeland, wildlife habitat watershed and recreation.

This unit covers approximately 5,086 acres or 1.0 percent of the area.

Capability unit- Grapvine VIIs.

Capability unit- Nickel VIIe.

122 - Rock outcrop-Tecopa-St. Thomas complex, 30 to 75 percent slopes

This unit is on steep and very steep mountains and low hills. Slopes are dominantly 30 to 60 percent, but range from 20 to 75 percent. The native vegetation is creosotebush, yucca, white bursage, Mormon tea, blackbrush, desert trumpet, cacti and annual and perennial grasses. Elevation ranges from 1700 to 5000 feet with limited areas near 5200 feet. The estimated average annual precipitation is 5 to 9 inches. Mean annual air temperature ranges from 53 to 67 degrees F, and the frost-free period is 200 to 265 days.

Rock outcrop makes up approximately 60 percent of the unit, Tecopa very gravelly sandy loam 15 percent, and St. Thomas very gravelly fine sandy loam 15 percent. Included in this unit is about 5 percent of Arizo very gravelly loamy sand along the drainageways, and 5 percent boulder fields on very steep side slopes.

The rock outcrop is bare or nearly bare exposed bedrock with limited amounts of desert shrubs growing in the rock fractures. The exposed bedrock includes limestone, dolomite, quartzite, schist, gneiss, shale, sandstone and volcanic rock.

Tecopa soil is very shallow and well-drained. It formed in residual material derived from quartzite, shale, gneiss, schist and sandstone with limited influence from limestone and dolomite.

Typically, the surface is covered with 75 percent of anugular and subangular gravel and some cobble. The surface layer is pale brown very gravelly sandy loam about 1 inch thick. The underlying layer is light yellowish brown and very pale brown very gravelly sandy loam about 7 inches thick, and overlies fractured quartzite, schist or gneiss bedrock. This soil is calcareous and usually has an accumulated lime layer overlying the bedrock. It is moderately alkaline and slightly and violently effervescent.

This soil has moderate permeability. Available water capacity is very low. Surface runoff is rapid and erosion hazard is slight. Effective rooting depth is 4 to 20 inches, but some roots follow the rock fractures to greater depths.

The St. Thomas soil is shallow and very shallow and well-drained. This soil formed in residuum on limestone and dolomite with some influence from shale, sandstone and basic igneous rock.

Typically, the soil surface is covered with 90 percent limestone and dolomite gravel and cobble. The surface layer is pale brown very gravelly fine sandy loam about 1 inch thick. The underlying material is light yellowish brown and very pale brown very gravelly loam about 10 inches thick over extremely hard dolomite bedrock. It is violently effervescent and has an accumulated lime layer over the bedrock. The soil is moderately and strongly alkaline.

This soil has moderate permeability. Available water capacity is very low. Surface runoff is rapid, and the erosion hazard is slight. Effective rooting depth is 4 to 20 inches, but some roots follow the rock fractures to greater depths.

This soil complex is used for rangeland, wildlife habitat, recreation watershed and for mining.

This unit occupies approximately 28,443 acres or 5.6 percent of the area.

Capability unit-VIII.

123 - Rock outcrop-St. Thomas complex, 30 to 75 percent slopes

This complex of rock outcrop and St. Thomas very gravelly fine sandy loam is on steep and very steep mountains and low hills. Slopes range from 30 to 75 percent. The native vegetation is blackbrush, yucca, creosotebush, white bursage, eriogonum, cacti, Mormon tea and annual and perennial grasses. Elevation ranges from 2000 to 5500 feet. Estimated average annual precipitation is about 5 to 9 inches. The mean annual air temperature ranges from 53 to 67 degrees F, and the frost-free season is 200 to 260 days.

Rock outcrop makes up approximately 70 percent of the unit, and St. Thomas very gravelly fine sandy loam 30 to 75 percent slopes 25 percent. Included in this unit is about 3 percent of the very gravelly Arizo soils along the drainages, and 2 percent of shallow, moderately coarse textured Typic Torriorthents at the toe slopes of the hills and mountains.

The rock outcrop is bare or nearly bare exposed bedrock with limited amounts of desert shrubs growing in the rock fractures. The exposed bedrock is predominantly limestone and dolomite, but includes areas of other rock.

St. Thomas soil is shallow and very shallow and well-drained. It formed in residuum on limestone and dolomite with some influence from shale and sandstone on the lower slopes of the mountains. Typically, the soil surface has about 60 percent cover of gravel and 15 percent cobblestones and stones. The surface layer is a light yellowish brown very gravelly fine sandy loam about 1 inch thick. The underlying material is light yellowish brown very gravelly fine sandy loam about 10 inches thick over fractured limestone, or dolomite bedrock. It is violently effervescent and moderately and strongly alkaline.

The St. Thomas soil has moderate permeability. Available water capacity is very low. Surface runoff is rapid, and the erosion hazard is slight. Effective rooting depth is 4 to 20 inches, but some roots follow the rock fractures to greater depths.

This soil complex is used for rangeland, wildlife habitat, recreation watershed and for mining.

This unit occupies approximately 56,094 acres or 11.0 percent of the area.

Capability unit- VIII.

124 - Rock outcrop-Virgin Peak-Typic Haplustolls complex, 30 to 75 percent slopes

This complex of rock outcrop and steep and very steep soils is in the Kingston Mountains, mostly on the higher slopes. Slopes range from 30 to 75 percent or more, but are dominantly 30 to 60 percent. The vegetation is sagebrush (tridentata), bitterbrush, ephedra, some blackbrush, cheatgrass and scattered juniper and pinon pine. Elevation ranges from about 5000 to 7000 feet, with small areas near 7200 feet. The average annual precipitation is estimated to be 9 to 13 inches. Mean annual air temperature ranges from 45 to 53 degrees F, and the estimated frost-free pEriod is about 150 t 175 days.

This unit is about 40 percent rock outcrop, 20 percent Virgin Peak very cobbly sandy loam, 30 to 75 percent slopes, and 20 percent Typic Haplustolls, 30 to 75 percent slopes. Included in this unit is about 10 percent of extremely stony and bouldery or very cobbly soils which occur in the drainageways and very steep side slopes. Also Lithic Torriorthents make up about 10 percent of the unit and are located on the south facing slopes at the lower elevations.

Rock outcrop is the bare or nearly bare exposed granitic bedrock with limited amounts of vegetation growing in the rock fractures. The percentage of rock outcrop varies from one slope to another, but is usually higher on the upper slopes of the mountains.

Virgin Peak soil is shallow and very shallow and well-drained. The soil formed in residuum on granitic rock. Typicaly, 60 percent of the soil surface is covered with gravel, stones and boulders. The surface layer is grayish brown very cobbly sandy loam about 3 inches thick. The underlying material is brown very gravelly sandy loam about 6 inches thick and overlies granitic bedrock. This soil has over 35 percent coarse fragments in the control section.

Permeability is moderate and available water capacity is very low. Surface runoff is rapid and erosion hazard is slight. Effective rooting depth is 4 to 20 inches.

The Typic Haplustolls are shallow, well-drained, very cobbly or extremely stony sandy loam soils, formed in place on granitic rock. Typically, 50 percent of the soil surface is covered with cobble, stones and boulders. The surface layer is grayish brown very cobbly sandy loam about 8 inches thick. The underlying material is grayish brown very gravelly sandy loam about 3 inches thick overlying highly fractured granitic rock with 20 percent of soil material in the rock fractures. Extremely hard granitic rock is at 32 inches. This soil is neutral in reaction.

Permeability of the Typic Haplustolls is moderate. Available water capacity is very low. Surface runoff is rapid and erosion hazard is slight. Effective rooting depth is mostly 4 to 20 inches, but roots follow the rock fractures and rock structure of the shallow soil to greater depths.

This soil complex is used for wildlife habitat, rangeland, recreation watershed and mining.

This association covers approximately 9,328 acres or 1.8 percent of the area.

Capability unit Rock outcrop VIII.

125 - Tecopa-Rock outcrop complex, 15 to 60 percent slopes

This unit is on moderately steep, steep and very steep mountains and low hills. Slopes are dominantly 15 to 60 percent, but range from 10 to 75 percent. The native vegetation is creosotebush, yucca, cacti, white bursage, Mormon tea and blackbrush. Elevation ranges from 1800 to 5000 feet with limited areas and some mountain peaks near 5200 feet. The average annual precipitation is estimated to be 4 to 8 inches. Mean annual air temperature ranges from 53 to 67 degrees F, and the frost-free season is 200 to 260 days.

This unit is 55 percent Tecopa very gravelly sandy loam, 15 to 60 percent slopes, and 20 percent rock outcrop. Included in this unit is about 10 percent of a moderately fine-textured soil with an argillic horizon, 5 percent of Nickel soil and 3 percent of Arizo soil, all of which occur on the toe slopes of low hills, with Arizo soils along the narow drainageways. Also included in this unit is 7 percent of moderately coarse textured Typic Torriorthent which occurs in low saddles and on toe slopes of hills and mountains. These included soils make up 25 percent of the total acreage in the unit.

The Tecopa soil is very shallow, well-drained and very gravelly. It formed in residual material derived from quartzite, shale, gneiss, schist and sandstone with limited influence from limestone and dolomite.

Typically, the surface is covered with 75 percent of angular and subangular gravel and cobble. The surface layer is pale brown very gravelly sandy loam about 1 inch thick. The underlying layer is light yellowish brown and very pale brown very gravelly sandy loam about 7 inches thick overlying fractured quartzite, schist or gneiss bedrock. This soil is calcareous and usually has an accumulated lime layer overlying the bedrock. It is moderately alkaline and slightly to violently effervescent.

This soil has moderate permeability. Available water capacity is very low. Surface runoff is rapid and erosion hazard is slight. Effective rooting depth is 4 to 20 inches, but some roots follow the rock fractures to greater depths.

Rock outcrop is bare or nearly bare exposed bedrock with limited amounts of vegetation growing in the rock fractures. The exposed bedrock is dominantly quartzite, shale, sandstone, gneiss and schist. The percentage of rock outcrop varies from place to place, but is usually higher on upper slopes of the hills and mountain tops.

This soil complex is used for wildlife habitat, rangeland, recreation watershed and for mining.

This map unit covers approximately 80,762 acres, or 15.8 percent of the area.

Capability unit- VIIe.

126 - Theriot-Rock outcrop complex, 30 to 75 percent slopes

This complex of steep and very steep soils and rock outcrop is on the northwest slopes of the Kingston Mountain Range, west and northwest of Horse Thief Springs, and on the Nopah Mountain Range north of Emigrant Pass. Slopes range from 30 to 75 percent or more, but are dominantly 30 to 60 percent. The native vegetation is blackbrush, rabbitbrush, yucca, Mormon tea, cacti, snakeweed, galleta, bitterbrush, scattered juniper and cheatgrass. Elevation ranges from about 4800 to 6000 feet with one peak at an elevation of 6394 feet. The average annual precipitation is estimated to be 8 to 11 inches. Mean annual air temperature ranges from 50 to 54 degrees F, and the frost-free period is about 155 to 175 days.

This unit is about 45 percent Theriot very gravelly sandy loam, 30 to 75 percent slopes, and 35 percent rock outcrop. Included in this unit is about 10 percent of Lithic Haploxerolls, with slightly higher moisture control sections, on the upper part of the north facing slopes, and about 10 percent of very stony and extremely stony soils in the drainageways.

Theriot soils are shallow and very shalow, well-drained and very gravelly. They formed in residuum on dolomite, limestone, shale and conglomerate. Typicaly, 80 percent of the surface is covered with gravel, cobble and stone. The surface layer is grayish brown very gravelly sandy loam about 1 inch thick. The underlying layer is brown very gravelly sandy loam about 5 inches thick and overlies light yellowish brown very gravelly loam which extends to a depth of 10 inches. Extremely hard fractured rock is encountered at about 10 inches. This soil has over 35 percent coarse fragments in the control section, is moderately to strongly alkaline and strongly to violently effervescent.

Permeability of the Theriot soil is moderate. Available water capacity is very low. Surface runoff is rapid and erosion hazard is slight. Effective rooting depth is 4 to 20 inches, but roots follow the rock fractures to greater depths.

Rock outcrop is bare or nearly bare exposed bedrock with limited amounts of vegetation growing in the rock fractures. The exposed bedrock is dominantly limestone, dolomite, quartzite, shale and conglomerate. The percentage of rock outcrop varies from place to place, but is usually higher on the upper slopes of the hills and mountain tops.

This soil complex is used for rangeland, wildlife habitat, recreation watershed and mining.

This unit covers approximately 14,424 acres or 2.8 percent of the survey area.

Capability unit-VIII.

Approx. Acreage and Extent

Approximate acreage and proportionate extent of the soils.

Mapping Unit Name	Acres	Extent %
Arizo gravelly loamy sand, 0 to 2 percent slopes	2,234	0.44
Arizo very gravelly loamy sand, 2 to 8 percent slopes	45,884	9.00
Arizo very gravelly loamy sand, saline, 0 to 2 percent slopes	2,463	0.48
Arizo extremely stony loamy sand, 2 to 15 percent slopes	10,063	1.97
Badland	26,928	5.28
Bitter-Arizo-Nickel complex, 2 to 8 percent slopes	9,415	1.85
Bitter-Cave-Nickel complex, 2 to 15 percent slopes	51,875	10.17
Blackmount-Arizo complex 2 to 8 percent slopes	47,596	9.33
Blackmount-Nickel association, moderately sloping	21,009	4.12
Bluepoint-Arizo complex, 2 to 8 percent slopes	10,853	2.13
Bluepoint-Arizo-Cajon complex, 0 to 2 percent slopes	10,570	2.07
Gila loam, saline - badland association	6,652	1.30
Gila, saline - Playa complex	4,235	0.83
Gothard variant - Badland association	2,557	0.50
Knob Hill-Blackmount complex, 2 to 15 percent slopes	2,646	0.52
Nickel very gravelly sandy loam, 2 to 8 percent slopes	26,493	5.20
Nickel very gravelly sandy loam, 8 to 30 percent slopes	8,222	1.61
Nickel very stony sandy loam, 2 to 15 percent slopes	9,184	1.80
Nickel very stony sandy loam, 30 to 50 percent slopes	623	0.12
Nickel-Arizo association, strongly sloping	6,766	1.33
Nickel-Bitter very gravelly sandy loam, 15 to 30 percent slopes	9,590	1.88
Nickel-Grapevine association, gently sloping	5,086	1.00
Rock outcrop-Tecopa-St.Thomas complex, 30 to 75 percent slopes	28,443	5.58
Rock outcrop-St. Thomas complex 30 to 75 percent slopes	56,094	11.00
Rock outcrop-Virgin Peak-Typic Haplustolls complex, 30 to 75 percent slopes	9,328	1.83
Tecopa-Rock outcrop complex, 15 to 60 percent slopes	80,762	15.84
Theriot-Rock outcrop complex, 30 to 75 percent slopes	14,424	2.82
TOTAL	510,000	100.00

TABLE A1.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Kingston county	Amargosa county	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Pct
100	Arizo gravelly loamy sand, 0 to 2 percent slopes	2,234	0	2,234	0.4
101	Arizo very gravelly loamy sand, 2 to 8 percent slopes	30,341	15,543	45,884	9.0
102	Arizo very gravelly loamy sand, saline, 0 to 2 percent slopes	2,463	0	2,463	0.5
103	Arizo extremely stony loamy sand, 2 to 15 percent slopes	6,952	3,111	10,063	2.0
104	Badland	25,054	1,874	26,928	5.3
105	Bitter-Arizo-Nickel complex, 2 to 8 percent slopes	0	9,415	9,415	1.8
106	Bitter-Cave-Nickel complex, 2 to 15 percent slopes	47,963	3,912	51,875	10.2
107	Blackmount-Arizo complex, 2 to 8 percent slopes	46,043	1,553	47,596	9.3
108	Blackmount-Nickel association, moderately sloping	19,113	1,896	21,009	4.1
109	Bluepoint-Arizo complex, 2 to 8 percent slopes	0	10,853	10,853	2.1
110	Bluepoint-Arizo-Cajon complex, 0 to 2 percent slopes	7,052	3,518	10,570	2.1
111	Gila loam, saline	6,652	0	6,652	1.3
112	Gila-Playa complex	4,235	0	4,235	0.8
113	Gothard Variant-Badland association, nearly level	2,557	0	2,557	0.5
114	Knob Hill-Blackmount complex, 2 to 15 percent slopes	2,646	0	2,646	0.5
115	Nickel very gravelly sandy loam, 2 to 8 percent slopes	8,947	17,551	26,498	5.2
116	Nickel very gravelly sandy loam, 8 to 30 percent slopes	5,517	2,705	8,222	1.6
117	Nickel very stony sandy loam, 2 to 15 percent slopes	2,239	6,945	9,184	1.8
118	Nickel very stony sandy loam, 30 to 50 percent slopes	0	623	623	0.1
119	Nickel-Arizo association, strongly sloping	0	6,766	6,766	1.3
120	Nickel-Bitter very gravelly sandy loams, 15 to 30 percent slopes	991	8,599	9,590	1.9
121	Nickel-Grapevine association, gently sloping	205	4,881	5,086	1.0
122	Rock outcrop-Tecopa-St. Thomas complex, 30 to 75 percent slopes	25,743	2,700	28,443	5.6
123	Rock outcrop-St. Thomas complex, 30 to 75 percent slopes	24,672	31,422	56,094	11.0
124	Rock outcrop-Virgin Peak-Typic haplustolls complex, 30 to 75 percent slopes	0	9,328	9,328	1.8
125	Tecopa-Rock outcrop complex, 15-60 percent slopes	29,088	51,674	80,762	15.8
126	Theriot-Rock outcrop complex, 30 to 75 percent slopes	5,307	9,117	14,424	2.8
	Total	306,014	203,986	510,000	100.0

Soil Series Classification

CLASSIFICATION OF THE SOIL SERIES

KINGSTON-AMARGOSA AREA, CALIFORNIA

Soil Series	Family	Subgroup
Arizo	Sandy-skeletal, mixed, thermic	Typic Torriorthents
Bitter	Loamy-skeletal, mixed, thermic	Typic Haplargids
Blackmount	Sandy-skeletal, mixed, thermic	Typic Haplargids
Bluepoint	Mixed, thermic	Typic Torripsamments
Cajon	Mixed, thermic	Typic Torripsamments
Cave	Loamy, mixed, thermic, shallow	Typic Paleorthids
Gila	Coarse-loamy, mixed (calcareous), thermic	Typic Torrifluvents
Gothard Variant	Fine-loamy, mixed, thermic	Typic Natrargids
Grapevine	Coarse-loamy, mixed, thermic	Typic Caliorthids
Knob Hill	Sandy, mixed, thermic	Typic Calciorthids
Nickel	Loamy-skeletal, mixed, thermic	Typic Caliorthids
St. Thomas	Loamy-skeletal, carbonatic, thermic	Lithic Torriorthents
Tecopa	Loamy-skeletal, mixed (calcareous), thermic	Typic Torriorthents
Theriot	Loamy-skeletal, carbonatic, mesic	Lithic Torriorthents
Typic Haplustolls	Loamy-skeletal, mixed, mesic	Typic Haplustolls
Virgin Peak	Loamy-skeletal, mixed, mesic	Lithic Haplustolls

Soil Series Descriptions

Arizo Series

The Arizo series consists of deep, excessively drained, very gravelly and very cobbly or extremely stony coarse-textured soils derived from mixed recent alluvium including granite, gneiss, dolomite, limestone, sandstone, shale and quartzite. These soils are on alluvial fans and floodplains, at elevations of 1350 to 4800 feet, but are mostly 1400 to 4000 feet. Slope gradients are dominantly between 2 and 8 percent, but range upward to 15 percent.

Soils of the Arizo series are sandy-skeletal, mixed, thermic Typic Torriorthents.

Arizo soils are similar to the Cajon and Bluepoint soils, but have more gravel and cobble than these two soils. They are mapped in close association with the Bitter, Blackmount, Nickel and Grapevine soils.

Typical pedon of Arizo very gravelly loamy sand, 2 to 8 percent slopes, is located west of gravel road in SW1/4 Sec. 28, T181/2N, R12E, San Bernardino County, California.

75 to 80 percent of surface covered with gravel and some cobble.

A1 0 to 5 inches; pale brown (1YR 6/3) very gravelly loamy sand, dark brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky,

nonplastic; few medium roots; many fine and very fine interstitial pores; 55 percent gravel and some cobbles; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

C1 5 to 22 inches; pale brown (10YR 6/3) stratified very gravelly loamy sand and very gravelly sand, dark brown (10YR 4/3) moist; massive; soft to slightly hard, very friable, nonsticky, nonplastic; common fine and very fine roots; many fine and very fine interstitial pores; 55 percent gravel and some cobbles; strongly to violently effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

C2 22 to 40 inches; pale brown (10YR 6/3) stratified very gravelly loamy sand and very gravelly sand, dark yellowish brown (10YR 4/4) moist; massive; soft to slightly hard, very friable, nonsticky, nonplastic; many fine and very fine roots; many fine and very fine interstitial pores; 50 percent gravel and some cobbles; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

C3 40 to 60 inches pale brown (10YR 6/3) very gravelly sand, dark yellowish brown (10YR 4/4) moist; massive; soft to slightly hard, very friable, nonsticky, nonplastic; many fine and very fine interstital pores; 60 percent gravel and some cobbles; violently effervescent; moderately alkaline (pH 8.4).

Range in Characteristics: Average annual soil temperature is estimated to range from 59 to 72 degrees F. The soils are usually dry. The driest periods are in the spring, summer and fall. Thin lime coatings are on the underside of rock fragments in C horizon in some pedons. The soil ranges from mildly to strongly alkaline.

It is a gravelly loamy sand to extremely stony loamy sand. The control section is predominantly sand, coarse sand, or loamy sand, modified by rock fragments. Some pedons contain thin strata of gravelly or very gravelly sandy loam in the control section. Rock fragment ranges from 35 to approximately 80 percent in the control section. The soil usually has uniform color. Hue is 10YR or 7.5YR, value is 5 through 7 dry, 4 through 6 moist, and chroma are 2 through 4.

Bitter Series

The Bitter series consists of deep, well-drained soils that formed in materials weathered from granite, gneiss, schist, limestone and quartzite alluvium. Bitter soils are on dissected old fans between the low more recent fans and the toe slopes of steep and very steep hills and mountains. Elevations range from 2000 to 3800 feet. Slopes range from 2 to 20 percent but are dominantly 2 to 8 percent.

Soils of the Bitter series are loamy-skeletal, mixed, thermic Typic Haplargid.

Bitter soils are similar to the Arizo, Blackmount, Nickel and Grapevine soils. Arizo, Nickel and Rillino soils lack argillic horizons and Nickel and Grapevine soils have calcic horizons. Solum thickness of the Blackmount soil is limited to 5 to 10 inches. They occur in close association with the Arizo, Blackmount, Cave, Nickel and Grapevine soils.

Typical pedon of Bitter very gravelly sandy loam in an area of Bitter-Cave-Nickel complex, 2 to 15 percent slopes is located in the NE quarter of NW quarter Sec. 17, T19N, R9E, San Bernardino Co., California.

90 percent of surface covered with gravel, cobble and stone - gravel pavement.

A11	0-1/2"	Pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; weak thick platy structure; slightly hard, friable, nonsticky, nonplastic; few very fine roots; common fine and medium vesicular and tubular pores; 75 to 90 percent gravel and cobble; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.
A12	1/2-21/2"	Pale brown (10YR 6/3) very gravelly, sandy loam, dark brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, nonsticky, nonplastic; few very fine roots; common fine and medium vesicular and tubular pores; 50 percent gravel and cobble; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.
B21t	2 1/2-5"	Light brown (7.5YR 6/4) very gravelly sandy loam, dark brown (7.5YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky, slightly plastic; few fine and coarse roots; few fine tubular and interstitial pores; common thin clay films occur on faces of peds and line tubular pores; 45 percent gravel and cobble; slightly effervescent; moderately alkaline (pH 8.3); clear wavy boundary.
B22t	5-16"	Reddish yellow (5YR 6/6) very gravelly sandy loam, yellowish red (5YR 4/6) moist; weak very fine, fine and medium subangular blocky structure; slightly hard to hard, friable, slightly sticky, slightly plastic; few fine and coarse roots; few fine tubular and interstitial pores; common thin clay films occur on faces of peds and line tubular pores; 45 percent gravel and cobble; slightly effervescent; moderately alkaline (pH 8.3); clear wavy boundary.
C1	16-24"	Pinkish gray (7.5YR 7/2) very gravelly loamy sand, pinkish gray (7.5YR 6/2) moist; massive; hard, very friable, nonsticky, nonplastic; common very fine and fine roots; common fine interstitial pores; 50 percent gravel and cobble; slightly effervescent, moderately alkaline (pH 8.3); clear wavy boundary.

IIC2ca 24-60" Light gray (10YR 7/2) very gravelly loamy sand, light brownish gray (10YR 6/2) moist; massive; slightly hard to hard, loose, nonsticky, nonplastic; common very fine and fine roots; common fine interstitial pores; 75 percent gravel and cobble; violently effervescent; moderately alkaline (pH 8.3).

Range in Characteristics: Thickness of the solum is 10 to 30 inches. The estimated mean annual soil temperature ranges from 59 degrees to 68 degrees F. The soils are usually dry for 6 months or more during most years, mainly during the spring, summer and fall months, and are low in organic matter. The pH range is moderately to strongly alkaline. The soil is calcareous throughout. Fine salt and gypsum segregations occur in some pedons but is not diagnostic of the series.

The A horizon has hue of 10YR or 7.5YR, value of 6 or 7 dry, 4 or 5 moist, and chroma of 3 or 4. It is a gravelly or very gravelly sandy loam or loam.

The B2t horizon has hue of 5YR or 7.5YR, value of 5 or 6 dry, 4 or 5 moist, and chroma of 4 through 6. Textures are gravelly or very gravelly heavy loam, heavy sandy loam, sandy clay loam or clay loam and averages more than 35 percent coarse fragments, mostly gravel and cobbles.

The C horizon has hue of 10YR or 7.5YR, value of 5 through 8 dry, 4 through 6 moist, and chroma of 2 through 4. It is very gravelly loamy sand, and very gravelly or very cobbly sand that may have thin strata of very gravelly sandy loam. Lime coatings are on the gravel and cobble in the Cca horizon.

Blackmount Series

The Blackmount series consists of deep, well-drained soils formed in material from mixed alluvium including granite, schist, quartzite, gneiss, limestone, dolomite, and some volcanic rock. Blackmount soils are on nearly level to moderately sloping dissected old fans at elevations of 1400 to 4000 feet. Slopes are dominantly 2 to 5 percent, but range up to 8 percent.

Taxonomic Class: Sandy-skeletal, mixed, thermic family of Typic Haplargids.

Blackmount soils are similar to the Arizo, Bitter, Nickel and Grapevine soils. Arizo, Nickel and Grapevine soils lack argillic horizons and Nickel and Grapevine soils have calcic horizons. Bitter soils have solum thickness of 10 to 30 inches. Blackmount soils are closely associated with the Arizo, Bitter, Cave, Nickel and Grapevine soils in this area.

Typical pedon of Blackmount very gravelly sandy loam, Blackmount-Arizo complex, 2 to 8 percent slopes, is located in the SW1/4 Sec. 22, T20N, R8E, Inyo County, California.

80 to 90 percent of surface covered with gravel pavement

A1 0-1" Pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 5/3) moist; weak coarse prismatic structure; slightly hard, friable, nonsticky, nonplastic; common very fine roots; many very fine, fine and medium vesicular pores; 60 percent gravel; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

B21tca 1-5"	Yellowish red (5YR 5/6) very gravelly sandy loam or clay loam, yellowish red (5YR 4/6) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common very fine roots; common fine interstitial and tubular pores; few thin clay films line tubular and interstitial pores and colloid bridging between sand grains; 40 to 60 percent gravel and cobble; common to many large white salt or gypsum crystals; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.
B22tcasa 5-10"	Yellowish red (5YR 5/6) very gravelly sandy loam, yellowish red (5YR 4/6) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common very fine roots; common fine interstitial and tubular pores; few thin clay films line pores and colloid bridging between sand grains; 40 to 60 percent gravel and cobble; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.
C1casa 10-42"	Pale brown (10YR 6/3) stratified very gravelly loamy sand and very gravelly sand, brown (10YR 5/3) moist; massive; slightly hard to hard, loose, nonsticky, nonplastic; few very fine roots; many fine interstitial pores; 65 percent gravel and cobble; common thin coatings of lime on gravel; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.
C2 42-60"	Pale brown (10YR 6/3) very cobbly sand, brown (10YR 5/3) moist; massive; slightly hard, loose, nonsticky, nonplastic; many fine interstitial pores; 80 percent cobble and gravel; slightly effervescent; strongly alkaline (pH 8.6).

Range in Characteristics: Solum thickness is 5 to 10 inches. Mean annual soil temperature is 60 degrees to 72 degrees F. These soils are usually dry for 6 months or more during most years. The A1 horizon has hue of 10YR or 7.5YR, value of 6 or 7 dry and 4 or 5 moist, and chroma of 2 through 4. The B2t horizon has hue of 7.5YR or 5YR, value of 5 or 6 dry, and 4 or 5 moist, and chroma of 4 or 6. It is a sandy loam, loam, light sandy clay loam or fine sandy loam, modified by gravel. Fine salt and gypsum segregations may occur in the B2t, C1casa and C2 horizons but are not diagnostic of the series. The C horizons are stratified very gravelly loamy sand, very gravelly sand and very gravelly coarse sandy loam. pH ranges from moderately to strongly alkaline. The soil is calcareous throughout.

Bluepoint Series

The Bluepoint series consists of deep, somewhat excessively drained soils on old alluvial fans, and floodplains. These soils formed in alluvium from mixed sources including quartzite, granite, gneiss, dolomite, limestone and sandstone. Slopes range from 0 to 8 percent.

Bluepoint soils are similar to the Arizo, Cajon and Knob Hill soils. Arizo soils have very gravelly control sections and Cajon soils have colors with hues of 10YR and 2.5YR. Knob Hill soils have calcic horizons. Bluepoint soils are associated with the Arizo, Bitter, Blackmount, Cajon, Knob Hill and Nickel soils. The Bitter and Blackmount soils have argillic horizons. Knob Hill and Nickel have calcic horizons.

The Bluepoint series is a member of the mixed, thermic family of Typic Torripsamments.

Typical pedon of Bluepoint loamy sand, in an area of - Bluepoint-Arizo complex, 2 to 8 percent slopes is located in the SE1/4 Sec. 24, T18N, R11E, San Bernardino County, CA.

A1	0-7"	Light brown (7.5YR 6/4) loamy sand, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky, nonplastic; few very fine and fine roots; common very fine interstitial pores; 2 percent gravel; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.
C1	7-21"	Light brown (7.5YR 6/4) loamy sand, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky, nonplastic; many very fine, fine and

		medium roots; common very fine interstitial pores; 5 percent gravel; violently effervescent, moderately alkaline (pH 8.2); clear wavy boundary.
C2	21-36"	Light brown (7.5YR 6/4) loamy sand, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky, nonplastic; common very fine and fine roots; common very fine interstitial pores; 5 to 8 percent gravel; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
C3ca	36-48"	Reddish yellow (7.5YR 6/6) loamy sand, strong brown (7.5YR 5/6) moist; weak coarse subangular blocky structure, near massive; slightly hard, very friable, nonsticky, nonplastic; few very fine roots; few very fine interstitial and few fine tubular pores; 5 to 8 percent gravel; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
C4ca	48-56"	Reddish yellow (7.5YR 6/6) loamy sand, strong brown (7.5YR 5/6) moist; weak coarse subangular blocky structure, near massive; weakly lime cemented; slightly hard, very friable, nonsticky, nonplastic; few very fine roots; few very fine interstitial and few fine tubular pores; 5 to 8 percent gravel; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
C5ca	56-60"	Light brown (7.5YR 6/4) loamy sand, brown (7.5YR 5/4) moist; massive; loose, very friable, nonsticky, nonplastic; common very fine interstitial pores; 25 to 30 percent gravel; violently effervescent, moderately alkaline (pH 8.2).

The soils are usually dry. The soils have hue of 7.5YR or 5YR, value of 5 through 7 dry, 4 or 5 moist, and chroma of 3 through 6. The series control section is dominantly loamy sand, but in some pedons is sand or fine sand. It averages less than 15 percent rock fragments, but up to 30 percent fine gravel may be present in individual strata of some pedons. The soils are usually calcareous throughout, containing less than 15 percent calcium carbonate equivalent. They are noncalcareous in some part of the control section in some pedons, but are never noncalcareous throughout. Few to common gypsum or lime segregations are present in some pedons. The soils are moderately to strongly alkaline.

Cajon Series

The Cajon series consist of deep, somewhat excessively drained soils on low fans and floodplains. These soils formed in mixed alluvium from granite, quartzite, gneiss, limestone, dolomite and sandstone. Slopes are dominantly 1 to 2 percent but range from 0 to about 5 percent.

Cajon soils are similar to the Arizo, Bluepoint and Knob Hill soils. Arizo soils have very gravelly control sections. Bluepoint soils have colors with hues of 7.5YR or redder. The Knob Hill soils have calcic horizons. Cajon soils are associated with the Bitter, Blackmount, Nickel and the similar Arizo, Bluepoint and Knob Hill soils. Bitter and Bitter Spring soils have argillic horizons. Nickel soils are moderately coarse-textured and have a calcic horizon.

The Cajon series is a member of the mixed, thermic family of Typic Torripsamments.

Typical pedon of Cajon loamy sand, in an area of - Bluepoint-Arizo-Cajon complex, 0 to 2 percent slopes, is located in the NE1/4 Sec. 31, T20N, R9E.

A1 0-3" Pale brown (10YR 6/3) loamy sand, dark brown (10YR 4/3) moist; weak thick platy structure; soft, very friable, nonsticky, nonplastic; few very fine roots; many very fine interstitial pores; 5 percent gravel; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

C1	3-12"	Pale brown (10YR 6/3) loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky, nonplastic; common very fine and fine roots; many very fine interstitial pores; 5 percent gravel; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
C2	12-25"	Pale brown (10YR 6/3) gravelly loamy sand, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky, nonplastic; common very fine, fine and few medium roots; many very fine interstitial pores; 15 percent gravel; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
C3	25-45"	Pale brown (10YR 6/3) gravelly loamy sand, dark brown (10YR 4/3) moist; massive; soft; very friable, nonsticky, nonplastic; common very fine, fine and few medium roots; many very fine interstitial pores; 20 percent gravel; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
C4	45-60"	Light yellowish brown (10YR 6/4) very gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky, nonplastic; few very fine and fine roots; many very fine interstitial pores; 35 to 50 percent gravel; slightly effervescent; moderately alkaline (pH 8.2).

The soil is usually dry and there is weak stratification of sandy material modified by gravel. Typically the soil is slightly to strongly effervescent and mildly to moderately alkaline. This soil has hue of 10YR or 2.5YR, value of 5 through 7 dry, 4 or 5 moist, and chroma of 3 through 6. Textures range from loamy sand or gravelly loamy sand to sand or gravelly sand.

calcium carbonate equivalent. They are noncalcareous in some part of the control section in some pedons, but are never noncalcareous throughout. Few to common gypsum or lime segregations are present in some pedons. The soils are moderately to strongly alkaline.

Cave Series

The Cave series consists of shallow, well drained soils with an indurated lime-cemented hardpan at shallow depths. The soil formed in old mixed alluvium high in calcium carbonate. Cave soils are on dissected high fans and low hills between the toe slopes of mountains and the low more recent fans. Elevations range from 2000 to 3800 feet. Slopes are dominantly 1 to 6 percent but range from 0 to 15 percent.

The Cave series is a member of the loamy, mixed, thermic, shallow family of Typic Paleorthids.

Cave soils are similar to the Nickel and Grapevine soils and are closely associated with the Arizo, Bitter, Bluepoint, Nickel and Grapevine soils. All of these lack an indurated pan. Arizo, Bitter and Nickel soils have very gravelly control sections and Bluepoint is a loamy sand or sand.

Typical pedon of Cave gravelly sandy loam is located in the SE1/4 Sec. 36, T19N, R10E in an area mapped Bitter-Cave-Nickel complex, 2 to 15 percent slopes. 50 percent of surface covered with gravel, cobbles and stones.

A1	0-3"	Light yellowish brown (10YR 6/4) gravelly sandy loam, brown (7.5YR 5/4) moist; weak thin platy structure; slightly hard, friable, slightly sticky, slightly plastic; few very fine roots; many fine vesicular pores; 35 percent gravel; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

C1	3-10"	Light brown (7.5YR 6/4) gravelly loam, brown (7.5YR 5/4) moist; massive; slightly hard, friable, slightly sticky, slightly plastic; many very fine roots; common very fine interstitial and common fine tubular pores; 30 percent gravel; violently effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.
C2cam	10"+	Indurated lime-cemented hardpan; massive; extremely hard.

Range in Characteristics: Depth to the lime-cemented pan ranges from 4 to 20 inches. The mean annual soil temperature ranges from 60 to 72 degrees F. These soils contain less than 1 percent organic matter and are usually dry. The A horizon has hue of 10YR or 7.5YR, value of 5 through 7 dry and 3 or 4 moist, and chroma of 3 and 4. Some pedons have a C1Ca horizon immediately overlying the pan layer. The control section ranges from a gravelly loam through gravelly sandy loam.

Gila Series

The Gila series consist of deep, well-drained, medium textured soils on floodplains and low alluvial fans. These soils formed in mixed alluvium from quartzite, limestone, schist, gneiss, and dolomite with some influence from volcanic rock. Slopes range from 0 to 2 percent, but are dominantly less than 1 percent.

Gila soils are associated with the Arizo, Blackmount and Nickel soils. All of these soils have very gravelly control sections. Bitter Spring soils have an argillic horizon and Nickel soils have calcic horizons.

Soils of the Gila series are coarse-loamy, mixed, (calcareous), thermic Typic Torrifluvents.

Typical pedon of Gila silt loam, saline, is located in the SE1/4 Sec. 25, T22N, R7E - Inyo County, CA.

A11	0-1/2"	Pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate very fine platy structure-and platy structure is actually thin stratification; slightly hard, very friable, nonsticky, nonplastic; few very fine roots; common very fine interstitial pores; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.
A12	1/2-2"	Light yellowish brown (10YR 6/4) silt loam, yellowish brown (10YR 5/4) moist; weak very fine platy structure; slightly hard, very friable, slightly sticky, slightly plastic; few very fine roots; common very fine interstitial pores; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

A13	2-5"	Light yellowish brown (10YR 6/4) silt loam, yellowish brown (10YR 5/4) moist; moderate very fine platy structure; slightly hard, very friable, slightly sticky, slightly plastic; common very fine and few fine and medium roots; common very fine interstitial pores; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.
C1	5-11"	Light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky, nonplastic; many very fine and few fine and medium roots; many very fine interstitial pores; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.
C2	11-23"	Light yellowish brown (10YR 6/4) silt loam, yellowish brown (10YR 5/4) moist; strong fine platy structure; slightly hard, very friable, slightly sticky, slightly plastic; many very fine, fine and few medium and large roots; common fine tubular pores; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
C3	23-33"	Light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; moderate fine and medium platy structure; slightly hard, very friable, slightly sticky, slightly plastic; many very fine, fine and few medium and large roots; common very fine interstitial and common fine tubular pores; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.
C4	33-45"	Light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky, slightly plastic; common very fine, fine and few medium roots; common very fine interstitial and few fine tubular pores; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.
C5	45-60"	Light yellowish brown (10YR 6/4) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky, nonplastic; few very fine roots; many very fine interstitial pores; strongly effervescent; strongly alkaline (pH 8.6).

*Platy structure as described is actually thin stratification.

These soils are more than 40 inches deep and are stratified. Thickness and texture of the strata are quite variable, but texture of the control section is dominantly loam, silt loam and fine sandy loam. These soils are usually dry and have hue of 10YR or 7.5YR, value of 5 through 7 dry, 4 through 5 moist, and chroma of 2 through 4. In some pedons mycelium-like veins of calcium carbonate and salt crystals are present. The pH of these soils is moderately to very strongly alkaline, and they are strongly to violently effervescent.

Gothard Variant Series

This variant consists of deep, somewhat poorly drained, moderately fine textured soils on low fans and old lake beds. These soils formed in old lake and fan deposited alluvium from mixed sources including limestone, quartzite, gneiss, granite and shale. Slopes are dominantly 0 to 1 percent.

This variant is similar to the Gothard soils but the moisture control section is not moist during July, August and September. The soil is somewhat poorly drained. It is associated with the Arizo, Bitter Spring and Nickel soils and the Badland miscellaneous land type. Arizo, Bitter Spring and Nickel soils are well-drained and have very gravelly control sections.

Typical pedon of Gothard variant in an area of Gothard variant-Badland association is located in the SE1/4 Sec. 6, T20N, R9E, Inyo County and just north of Davis Well.

A1	0-2"	Light gray (10YR 7/2) loam, brown (10YR 5/3) moist; weak think platy structure; hard, friable, slightly sticky, slightly plastic; few very fine roots; common fine and medium vesicular and tubular pores; 5 percent gravel on surface; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary.
B21tsa	2-41/2"	Very pale brown (10YR 7/3) heavy loam, brown (10YR 5/3) moist; moderate coarse prismatic structure; hard, friable, slightly sticky, slightly plastic; few very fine roots; common very fine interstitial and tubular pores; few thin clay films occur on faces of peds and line

	interstitial and tubular pores; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary.
B22tsa 41/2-11"	Pale brown (10YR 6/3) clay loam with many fine salt crystals, yellowish brown (10YR 5/4) moist; moderate medium prismatic structure; slightly hard to hard, friable, sticky, plastic; many fine and medium and few coarse roots; common fine interstitial and few fine tubular pores; few thin clay films occur on faces of peds and line interstitial and tubular pores; violently effervescent; very strongly alkaline (pH 9.2); clear wavy boundary.
C1casa 11-18"	Light gray (2.5Y 7/2) clay loam, light brownish gray (2.5Y 6/2) moist, with many fine and medium lime segregations and salt crystals, and few lime nodules; massive; soft to slightly hard, very friable, sticky, plastic; common fine and very fine roots; common fine interstitial pores; violently effervescent; strongly alkaline (pH 8.8); clear wavy boundary.
C2casa 18-30"	Light brownish gray (2.5Y 6/2) clay loam with common medium and large white lime segregations and nodules, grayish brown (2.5Y 5/2) moist; massive; hard, friable, sticky, plastic; few very fine roots; common very fine interstitial pores; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary.
C3casa 30-47"	Light brownish gray (2.5Y 6/2) clay loam with many large thin segregations of lime and salt, light gray (2.5Y N7/) moist; massive; very hard, friable, sticky, plastic; violently effervescent; stongly alkaline (pH 8.8); clear smooth boundary.
C4casa 47-60"	White (2.5Y N8/) and light brownish gray (2.5Y 6/2) clay loam, white (2.5Y N8/) and light brownish gray (2.5Y 6/2) moist; massive; very hard, friable, sticky, plastic; violently effervescent; strongly alkaline (pH 8.8).

Ranges--These soils are usually dry, especially during the summer and fall. The estimated mean annual soil temperature ranges from 64 to 72 degrees F. Textures of the A horizon range from loamy sand to loam and clay loam. Textures of the argillic horizon range from heavy loam and sandy clay loam to clay loam. Common to many white lime segregations, salt crystals and soft lime masses are present in the argillic horizons of most pedons. Hue of the A horizon is 10YR, value is 6 or 7 dry, and 5 moist with chroma of 2 or 3. Hue of the argillic horizon is 10YR or 7.5YR, value is 6 or 7 dry and 5 moist with chroma of 3 or 4. Hue of the Ccasa horizons and lime masses is 2.5Y or 10 YR, value is 6 through 8 dry, 5 through 7 moist, and chroma are 1 through 3.

Grapevine Series

The Grapevine series consists of deep, well-drained, gravelly medium and moderately coarse-textured soils. They formed on alluvial fans in calcareous old alluvium from limestone, schist, shale, dolomite, quartzite and granitic rocks. Slopes are dominantly 1 to 5 percent.

Grapevine soils are similar to the Cave and Nickel soils. Cave soils are shallow to an indurated lime-cemented pan and Nickel soils have very gravelly control sections. Grapevine soils are closely associated with the Cave and Nickel soils and in addition with the Arizo, Bitter, Blackmount and Bluepoint soils. Arizo soils have very gravelly loamy sand and sand control sections. Bitter and Blackmount soils have argillic horizons and Bluepoint soils have no calcic horizon and are loamy sands and sands.

The Grapevine series is a member of the coarse-loamy, mixed, thermic family of Typic Calciorthids.

Typical pedon of Grapevine gravelly fine sandy loam in an area of - Nickel-Grapevine association, gently sloping, is located in the eastern part of Sec. 31, T18N, R12E, San Bernardino Co., CA.

A11	0-2"	Very pale brown (10YR 7/3) gravelly fine sandy loam, brown (10YR 5/3) moist; weak thick platy structure; slightly hard, friable, nonsticky, nonplastic; few fine and coarse roots; many very fine interstitial and tubular pores; 20 percent fine, medium and coarse gravel; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.
A12	2-7"	Pale brown (10YR 6/3) fine sandy loam, dark yellowish brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky, nonplastic; few fine and very fine roots; common fine and very fine interstitial pores; 6 to 8 percent gravel; strongly to violently effervescent; moderately alkaline (pH 8.2); gradual smooth boundary.
B21	7-13"	Light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky, nonplastic; few fine and very fine roots; common fine and very fine interstitial pores; 15 percent gravel; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.
B22ca	13-21"	Light brown (7.5YR 6/4) gravelly sandy loam, dark brown (7.5YR 4/4) moist; massive; slightly hard, very friable, nonsticky, slightly plastic; few fine and very fine roots; common fine and very fine interstitial pores; 15 to 20 percent gravel; violently effervescent; 7 percent calcium carbonate, moderately alkaline (pH 8.2); gradual wavy boundary.
C1ca	21-60"	Pink (7.5YR 7/4) and light brown (7.5YR 6/4) gravelly light loam, brown (7.5YR 5/4) moist; massive; hard, friable, slightly sticky, slightly plastic; few fine and medium roots; common fine and very fine interstitial pores; 20 to 30 percent gravel; violently effervescent; many medium and large irregularly shaped lime masses and coatings; 19 percent calcium carbonate; moderately alkaline (pH 8.2); gradual wavy boundary.
C2ca	60-70"	Light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky, nonplastic; common fine and very fine interstitial pores; common gravel; strongly effervescent; 9 percent calcium carbonate.

Ranges--These soils are usually dry, especially during the summer and fall. The 10 to 40 inch zone averages gravelly fine sandy loam, gravelly sandy loam or gravelly loam with 15 to 35 percent gravel by volume. The A, B, and upper C horizons have hue of 10YR ov 7.5YR, value of 5 through 7 dry, 4 or 5 moist and chroma of 2 through 4. The Cca horizon has hue of 10YR or 7.5YR, value of 6 through 8 dry, 4 through 7 moist, and chroma of 2 through 4. Lime segregations have chroma of 0 through 4. These soils are moderately to strongly alkaline and slightly to violently effervescent.

Knob Hill Series

The Knob Hill series consists of deep, somewhat excessively drained soils on dissected alluvial fans and low hills. These soils formed in mixed old alluvium derived from quartzite, dolomite, limestone, gneiss, and schist. Slopes range from 2 to 15 percent.

Knob Hill soils are similar to the Arizo, Cajon, Bluepoint, Nickel and Grapevine soils. Arizo, Cajon and Bluepoint lack calcic horizons and Arizo soils have very gravelly control sections. Nickel soils have very gravelly moderately coarse textured control sections and Grapevine soils have gravelly medium or moderately coarse textured control sections. Knob Hill soil is closely associated with the Arizo, Bitter, Blackmount, Cajon, Bluepoint and Nickel soils. The Bitter and Blackmount soils have argillic horizons.

The Knob Hill series is a member of the sandy, mixed, thermic family of Typic Calciorthids.

Typical pedon of Knob Hill gravelly loamy sand in an area of -Knob Hill-Blackmount complex, 2 to 15 percent slopes is located in NW1/4 Sec. 24, T20N, R7E, Inyo County, CA.

A1	0-2"	Pale brown (10YR 6/3) gravelly loamy sand, brown (10YR 5/3) moist; weak coarse platy structure; slightly hard, soft, nonsticky, nonplastic; few fine and medium roots; many fine and very fine vesicular pores; 20 percent gravel; slightly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.
B	2-13"	Brown (7.5YR 5/4) light sandy loam, dark brown (7.5YR 4/4) moist; massive; slightly hard, very friable, nonsticky, nonplastic; common very fine, fine and medium, and few coarse roots; common fine and very fine interstitial pores; 5 percent gravel; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.
C1ca	13-26"	Pale brown (10YR 6/3) weakly cemented gravelly loamy sand, brown (10YR 5/3) moist; massive; slightly hard to hard; very friable, nonsticky, nonplastic; common very fine and few fine roots; common fine and very fine interstitial pores; 35 percent gravel; violently effervescent; strongly alkaline (pH 8.5); abrupt wavy boundary.
C2	26-35"	Light yellowish brown (10YR 6/4) loamy sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky, nonplastic; few very fine and fine roots; many fine interstitial pores; 10 percent gravel; strongly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary.
C3	35-44"	Pale brown (10YR 6/3) very gravelly loamy sand or sand, brown (10YR 5/3) moist; massive; hard to slightly hard, loose, nonsticky, nonplastic; common very fine roots; many fine interstitial pores; 60 percent gravel; slightly effervescent; very strongly alkaline (pH 9.2); abrupt wavy boundary.
C4	44-50"	Pale brown (10YR 6/3) loamy sand, brown (10YR 5/3) moist; massive; sightly hard, very friable, nonsticky, nonplastic; common very fine roots; many fine interstitial pores; 2 percent gravel; slightly effervescent; very strongly alkaline (pH 9.2); abrupt wavy boundary.
C5	50-63"	Pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 5/3) moist; massive; slightly hard to hard, loose, nonsticky, nonplastic; few very fine roots; many fine interstitial pores; 40 percent gravel; strongly effervescent; very strongly alkaline (pH 9.2).

Ranges - Depth to the Cca horizon ranges from 13 to 25 inches. These soils are usually dry. The control section is stratified and includes loamy sand, sandy loam that may be modified by gravel. The gravel content of the control section averages less than 35 percent. Color of the soil profile includes hues of 7.5Y and 10YR, values of 5 and 6 dry and 4 or 5 moist, and chromas of 2 to 4. The Cca horizon is normally weakly cemented having a dry consistency of slightly hard to hard.

Nickel Series

The Nickel series consists of well-drained, moderately coarse textured, very gravelly soils. They are on dissected alluvial fans and terraces. Nickel soils formed in very deep, very gravelly alluvium derived from quartzite, dolomite, limestone, gneiss, schist and granite. Slopes are dominantly 2 to 15 percent but range from 1 to 50 percent.

Nickel soils are similar to the Arizo, Knob Hill and Grapevine soils. Arizo soils have loamy sand and sand control sections with over 35 percent coarse fragments and do not have a calcic horizon. The Knob Hill soils are in a sandy family and Grapevine soils have less than 35 percent coarse fragments in the control section. Nickel soils are closely associated with the Bitter, Blackmount, Cajon and Bluepoint soils and the similar Arizo, Knob Hill and Grapevine soils. Bitter and Blackmount soils have argillic horizons, Cajon and Bluepoint soils are both coarse-textured and have less than 35 percent gravel in the control section.

The Nickel series is a member of the loamy-skeletal, mixed, thermic family of Typic Calciorthids.

Typical pedon of the Nickel very gravelly sandy loam, 2 to 8 percent slopes

is located in he NW1/4 of Sec 29, T18N, R12E, west side of gravel road, San Bernardino County, California.

Sixty to 70 percent of surface covered with gravel.

A11	0-2"	Pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; weak thick platy structure; slightly hard, very friable, nonsticky, nonplastic; few very fine roots; common fine and very fine interstitial pores; 35 percent gravel; slightly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.
A12	2-6"	Pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky, nonplastic; few very fine roots; common fine and very fine interstitial pores; 20 percent gravel; strongly effervescent; moderately alkaline (pH 8.); clear smooth boundary.
C1	6-22"	Pale brown (10YR 6/3) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky, nonplastic; common very fine and fine roots; common very fine and fine and few fine vesicular pores; 25 percent gravel; few fine lime filaments; strongly effervescent; strongly alkaline (pH 8.5); abrupt smooth boundary.
C2ca	22-40"	White (10YR 8/2) and very pale brown (10YR 7/3) very gravelly sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard to hard, weakly lime-cemented, friable, slightly sticky, nonplastic; few very fine roots; common fine interstitial and few fine vesicular pores; 60 percent gravel, many fine lime filaments and lime coatings on gravel cobble; violently effervescent; strongly alkaline (pH 8.5); clear wavy boundary.
C3ca	40-55"	Pale brown (10YR 6/3) and very pale brown (10YR 7/3) very gravelly sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard to hard, weakly lime-cemented, friable, slightly sticky, nonplastic;

few very fine roots; common fine interstitial and few fine vesicular pores; 60 percent gravel, many fine lime filaments and lime coatings on gravel and cobble; violently effervescent; strongly alkaline (pH 8.5); clear wavy boundary.

C4 55-65" Light gray (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; hard, very friable, nonsticky, nonplastic; common fine interstitial pores; 65 percent gravel and cobbles; violently effervescent; strongly alkaline (pH 8.5).

These soils are usually dry, especially during the summer and fall. The A and C1 horizons have hue of 10YR or 7.5YR, value of 6 or 7 dry, 4 or 5 moist, and chroma of 2 through 4. The 10 to 40 inch control section is predominantly very gravelly sandy loam, very gravelly coarse sandy loam with some horizons of gravelly or very gravelly fine sandy loam. The control section averages over 35 percent by volume of coarse fragments, mainly gravel with some cobble. The soil is moderately to strongly alkaline. The calcic horizon has hue of 10YR or 7.5YR, value of 6 through 8 dry, 6 or 7 moist, and chroma of 1 through 3. The Cca and underlying C horizon may contain several weakly lime-cemented lenses that are 1 to 8 inches thick.

St. Thomas Series

The St. Thomas series consists of shallow, well drained soils that formed in residuum from limestone and dolomite. St. Thomas soils are on low hills and low mountains and have slopes of 30 to 75 percent.

St. Thomas soils are similar to and associated with the Tecopa, Theriot and Virgin Peak soils. Tecopa soils are members of a mixed (calcareous) family, and the Theriot and Virgin Peak soils are in mesic temperature regime. St. Thomas soils are also associated with the Arizo, Bitter, Blackmount, Grapevine and Nickel soils. Arizo, Bitter, Blackmount, Grapevine and Nickel soils are all deep soils and lack bedrock within 60 inches of the surface.

The St. Thomas series is a member of the loamy-skeletal, carbonatic, thermic family of Lithic Torriorthents. These soils are violently effervescent and moderately to strongly alkaline.

Typical pedon of St. Thomas very gravelly fine sandy loam in an area of - Rock outcrop-St. Thomas complex, 30 to 75 percent slopes, is located in the SE1/4 of NE1/4 Sec. 5, T18N, R11E, San Bernardino Co., California.

A1	0-1"	Light yellowish brown (10YR 6/4) very gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; weak thin platy structure; soft, very friable, nonsticky, slightly plastic; common very fine and fine roots; common very fine interstitial pores; 35 percent coarse fragments; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.
C1ca	1-10"	Light yellowish brown (10YR 6/4) very gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky, slightly plastic; many very fine and fine roots; common very fine interstitial pores; 50 percent gravel and cobble; thin lime coatings on gravel and cobble; violently effervescent; moderately alkaline (pH 8.4); abrupt irregular boundary.
R	10+"	Fractured extremely hard limestone bedrock with soil material in fractures.

Ranges-- Depth to bedrock ranges from 4 to 20 inches. Mean annual soil temperature ranges from 59 to 72 degrees F. The soil is usually dry for 6 months or more during most years. The soil has hue of 10YR or 7.5YR, value of 6 through 8 dry, 5 and 6 moist, and chroma of 3 or 4. Texture of the A and C horizons ranges form very gravelly or very cobbly fine sandy loam to very gravelly or very cobbly fine sandy loam to very gavelly or very cobbly loam with 35 to 80 percent of rock fragments in the control section. Soft lime masses or lime segregations are usually present in the C horizon.

Tecopa Series

The Tecopa series consists of shallow, well drained soils that formed in residuum in medium to moderately coarse textured very gravelly calcareous material from impure quartzite, schist and gneiss with minor influence from basalt. Tocopa soils are on low hills, and low mountains and have slopes of 15 to 75 percent. The mean annual precipitation is about 4 to 8 inches and the mean annual air temperature is about 60 degrees F.

Tecopa soils are similar to the St. Thomas, Theriot and Virgin Peak soils. St. Thomas and Theriot soils have carbonatic mineralogy and Virgin Peak soil is a member of the mixed mesic family of Lithic Haplustolls. Tecopa soils are associated with the St. Thomas and Theriot soils and in addition with the Arizo, Bitter, Blackmount,, Grapevine and Nickel soils. Arizo, Bitter, Blackmount, Grapevine and Nickel soils are all deep soils and lack bedrock within 60 inches of the surface.

The Tecopa series is a member of the loamy-skeletal, mixed (calcareous) thermic family of Lithic Torriorthents.

Typical pedon of Tecopa very gravelly sandy loam in an area of Unit 125 Tecopa-Rock outcrop complex, 15 to 60 percent slopes, is located in the SW1/4 of SE1/4 Sec. 21, T20N, R8E, Inyo Co., CA.

75 to 80 percent of the surface is covered with gravel and cobble.

C1	1-6"	Light yellowish brown (10YR 6/4) very gravelly sandy loam or loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky, nonplastic; few fine and very fine roots; common very fine and fine interstitial pores; 50 percent gravel and cobble; stongly effervescent; moderately alkaline (pH 8.3); clear wavy boundary.
C1ca	6-8"	Very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; slightly hard to hard, friable, nonsticky, nonplastic; few fine and very fine roots; common fine interstitial pores; 60 to 70 percent gravel and cobble; violently effervescent; moderately alkaline (pH 8.4); abrupt irregular boundary.
R	8"	Extremely hard quartzite rock with lime coatings in rock fractures.

Ranges--The depth to bedrock ranges from 2 to 10 inches. Matrix texture of the control section is sandy loam or loam. Rock fragments range form 35 to 90 percent on the surface and from 35 to 80 percent throughout the profile. The mean annual soil temperature is 59 to 72 degrees F. These soils are usually dry for 6 months or more during most years, mainly during the spring, summer and fall months. The A horizon has hue of 7.5YR or 10YR, value of 6 or 7 dry, 4 or 5 moist, and chroma of 3 through 6. Organic matter content is less that 1.0 percent. C1 and C2ca horizons have hue of 10YR or 7.5YR, value of 6 or 7 dry, 5 or 6 moist, and chroma of 3 or 4. It is massive or has rock structure. Lime content ranges up to 15 percent and is mainly

Theriot Series

The Theriot series consists of shallow and very shallow, well-drained, very gravelly soils. They formed in materials weathered from limestone and dolomitic rock. Theriot soils are on mountains and hills at elevations of 4800 to 6000 feet. Slopes range from 30 to 75 percent or more.

Theriot soils are similar to the St. Thomas and Tecopa soils, however St. Thomas and Tecopa soils are in a thermic temperature regime. Theriot soils are associated with the Virgin Peak soils. Virgin Peak soils are dark-colored, have more that 1 percent organic matter and are nuetral in reaction.

The Theriot series is a member of the loamy-skeletal, carbonatic, mesic family of Lithic Torriorthents.

Typical pedon of Theriot very gravelly sandy loam in an area of Unit 141-Theriot-Rock outcrop complex, 30 to 75 percent slopes, is located in the NE 1/4 Sec. 5, T19N, R10E, San Bernardino Co., CA.

80 Percent of the surface is covered with gravel, cobbles and stones.

A1	0-1"	Grayish brown (10YR 5/2) very gravelly sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; slightly hard, soft, nonsticky, nonplastic; many very fine and fine roots; common fine interstitial pores; 70 percent gravel and cobble; violently effervescent; moderately alkaline (pH 8.3); abrupt wavy boundary.

C1	1-6"	Brown (7.5YR 5/4) very gravelly sandy loam, dark brown (7.5YR 4/4) moist; massive; slightly hard, friable, nonsticky, slightly plastic; many very fine, fine and medium roots; common fine interstitial pores; 60 percent gravel and cobble; violently effervescent; moderately alkaline (pH 8.3); clear wavy boundary.
C2ca	6-10"	Light yellowish brwon (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, nonsticky, slightly palstic; common fine and medium and few coarse roots; common fine interstitial pores; 75 percent gravel and cobble; violently effervescent; moderately alkaline (pH 8.3); abrupt irregular boundary.
R	10+"	Extremely hard fractured rock with soil material in fractures; violently effervescent.

Ranges--Depth to bedrock ranges from 4 to 20 inches. During nost years these soils are usually dry from late spring through September. The mean annual soil temperature ranges from 47 to 59 degrees F. The soil ranges from moderately to strongly alkaline. The A1 horizon has hue of 10YR, value of 5 or 6 dry, 3 or 4 moist, and chroma of 2 or 3. Texture of the A and C horizons ranges from very gravelly or very cobbly sandy loam ot very gravelly and very cobbly or extremely stony loam with 35 to 80 percent of rock fragments in the control section. Hue of the C horizon is 10YR or 7.5YR, with value of 5 through 8 dry, 4 through 6 moist, and chroma of 2 through 4. Soft lime masses and segregations are usually present in the C horizon.

Typic Haplustolls Series (Kingston Peak)

The Typic Haplustolls of the Kingston Peak Area consists of shallow, well-drained, dark-colored, very gravelly and very cobbly, moderately coarse textured soils that do not have lithic contact within 20 inches of the surface. They formed in materials weathered from granitic rock and are on mountains. Slopes are dominantly 30 to 75 percent.

The Typic Haplustolls are similar to and associated with the Virgin Peak and Theriot soils. Theroit soils have carbonatic mineralogy and lithic contact (consolidated bedrock) at 4 to 20 inch depths. The Virgin Peak soils also have lithic contact at less than 20 inch depths.

Typical pedon of the Typic Haplustolls, very cobbly sandy loam, in an area of-Rock outcrop-Virgin Peak-Typic Haplustolls complex, 30 to 75 percent slopes, is located in the NW 1/4 Sec. 9, T19N, R10E, San Bernardino Co., CA.

The surface is covered with 50 percent cobbles and stones.

A11	0-4"	Grayish brown (10YR 5/2) very cobbly sandy loam, very dark grayish brown (10YR 3/2) moist; strong fine granular structure; soft, friable, nonsticky, nonplastic; many very fine roots; many very fine interstitial pores; 50 percent gravel and cobble; noneffervescent; neutral (pH 6.8); clear wavy boundary.
A12	4-8"	Grayish brown (10YR 5/2) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; massive; soft, friable, slightly sticky, slightly plastic; many very fine and few fine and medium

		roots: many very fine interstitial pores; 50 percent gravel and cobble; noneffervescent; neutral (pH 6.8); clear wavy boundary.
A & C	8-11"	Grayish brown (10YR 5/2) very gravelly sandy loam, about 50 percent each of dark yellowish brown (10YR 4/4) and very dark grayish brown (10YR 3/2) moist; massive; slightly hard, friable, slightly sticky, slightly plastic; many very fine and few fine and medium roots; many very fine interstitial pores; 60 to 70 percent gravel and cobble; noneffervescent; neutral (pH 6.8); abrupt wavy boundary.
Cr-R	11-32"	Granitic Saprolite with soil material between rock fragments; rock structure; slightly hard, firm, slightly sticky, slightly plastic; 80 percent rock; noneffervescent; neutral (pH 7.2); abrupt irregular boundary.
R	32+"	Extremely hard granitic rock.

Ranges--Depth to consolidated bedrock is 20 to 40 inches. The estimated mean annual soil temperature is 49 to 59 degrees F. Elevation ranges form 5000 or near 7200 feet. They are moist in the winter, and are not dry in all parts for 45 consecutive days in the summer. The A horizons have hue of 10YR, value of 5 dry, 3 moist, and chroma of 2 and 3 . Texture of the A and A-C horizons is very cobbly sandy loam, very gravelly sandy loam and extremely stony sandy loam with 35 to 80 percent rock fragments in the control section. pH is 6.6 to 7.2.

Virgin Peak Series

The Virgin Peak series consists of shallow dark-colored, well drained, very gravelly or very cobbly, moderately coarse textured soils. They formed in materials weathered from granitic rock. Virgin Peak soils are on mountains and have slopes of 30 to 75 percent.

Virgin Peak soils are similar to the St. Thomas, Tecopa and Theriot soils. St. Thomas and Theriot soils have carbonatic mineralogy and Tecopa soils are in a calcareous thermic family. Virgin Peak soils are associated with the St. Thomas and Theriot soils have carbonatic mineralogy and Tecopa soils are in a calcareous thermic family. Virgin Peak soils are associated with the St. Thomas, Tecopa and Theriot soils and in addition with the Typic Haplustolls of the mountains. The Typic Haplustolls have extremely hard granitic rock below 20 inch depths.

The Virgin Peak series is a member of the loamy-skeletal, mixed, mesic family of Lithic Haplustolls.

Typical pedon of Virgin Peak very cobbly sandy loam in an area of -Rock outcrop-Virgin Peak-Typic Haplustolls complex, 30 to 75 percent slopes is located in the NE 1/4 Sec. 8, T19N, R10E, San Bernardino Co., CA.

A1	0-3"	Grayish brown (10YR 5/2) very cobbly sandy loam, very dark grayish brown (10YR 3/2) moist; strong very fine granular structure; soft, friable, nonsticky, nonplastic; many very fine roots; many very fine interstitial pores 40 to 60 percent cobble and stones; noneffervescent: neutral (pH 6.8); abrupt wavy boundary.
C1	3-9"	Brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; massive; slightly hard, friable, slightly sticky, slightly plastic; many very fine roots; many very fine interstitial pores; 50 percent gravel and cobble; noneffervescent; neutral (ph 6.8); abrupt irregular boundary.
R	9-15"	Extremely hard granitic bedrock, somewhat fractured; massive.

Ranges--Depth to the lithic contact is 7 to 20 inches. The estimated mean annual soil temperature is 49 to 59 degrees F. They are moist in the winter, and are not dry in all parts for 45 consecutive days in the summer.

The A1 and C horizons have hue of 10YR, value of 5 dry and 3 moist, and chroma of 2 and 3. Texture is very cobbly sandy loam and very gravelly sandy loam or extremely stony sandy loam with 35 to 80 percent rock fragments. pH is 6.6 to 7.2.

Genetic Key

GENETIC KEY TO SOILS

Map unit symbol	Soil series	Slope percent	Soil family	Diagnostic surface and subsurface horizons	Parent material	Landform	Effective Rooting depth	Degree of surface covered by gravel (> 2mm diameter)	Drainage class	Associated vegetation	Reaction
100 101 102 103 104 105 107 109 110 119	Arizo	2-15	Typic Torriorthent: sandy-skeletal mixed, thermic	ochric none	Mixed recent alluvium including granite, gneiss, dolomite, limestone, sandstone shale and quartzite	Alluvial fans and floodplains	60"+	75-80%	Excessively drained	Creosotebush, yucca, cacti, catclaw, Mormon tea, eriogonam saltbrush, white bursage, blackbrush and annuals	Moderately alkaline
104 105 106 120	Bitter	2-20	Typic Haplargid: loamy-skeletal mixed, thermic	ochric argillic	Weathered granite gneiss, schist, limestone, and quartzite alluvium	Alluvial fans and toe slopes	60"+	90%	Well-drained	Creosotebush, black brush, white bursage, Mormon tea, cacti and yucca	Moderately to strongly alkaline
107 108 114	Blackmount	2-8	Typic Haplargid: sandy-skeletal, mixed, thermic	ochric argillic	Mixed alluvium including granite, schist, quartzite, gneiss, limestone dolomite, and some volcanic rock	Alluvial fans	60"+	80-90%	Well-drained	Creosotebush, white subsage, desert trumpet, plantain, cacti and annuals	Moderately to strongly alkaline

GENETIC KEY TO SOILS cont.

Map unit symbol	Soil series	Slope percent	Soil family	Diagnostic surface and subsurface horizons	Parent material	Landform	Effective Rooting depth	Degree of surface covered by gravel (>2mm diameter)	Drainage class	Associated vegetation	Reaction
109 110	Bluepoint	0-8	Typic Torripsamment: mixed, thermic	ochric	Mixed alluvium including quartzite, granite, gneiss, dolomite, limestone and sandstone	Alluvial fans and floodplains	60"+	Nonstony	Somewhat excessively drained	Creosotebush, white bursage, blackbrush Indian rice, yucca, stipa, cacti and annuals	Moderately to strongly alkaline
110	Cajon	0-5	Typic Torripsamment: mixed, thermic	ochric none	Alluvium from granite, quartzite, gneiss, limestone, dolomite and sandstone	Alluvial fans and floodplains	60"+	Nonstony	Somewhat excessively drained	Creosotebush, white bursage, blackbrush, yucca, Indian rice, stipa and cacti	Mildly to moderately alkaline
106	Cave	0-15	Typic Paleorthid: loamy, mixed, thermic, shallow	ochric petrocalcic	Mixed alluvium alluvium high in $CaCO_3$	Alluvial fans and low hills	4-20"	50%	Well-drained	Creosotebush, blackbrush, white bursage cacti, Mormon tea, yucca, spiny horsebrush, and plantain	Moderately alkaline
111 112	Gila	0-2	Typic Torrifluvent: coarse-loamy, mixed (calcareous) thermic	ochric none	Alluvium from quartzite, limestone schist, gneiss, dolomite, and some volcanic rock	Alluvial fans and floodplains	60"+	Nonstony	Well-drained	Fourwing saltbush, salt grass, alkali seepweed, and mesquite	Moderately to very strongly alkaline

GENETIC KEY TO SOILS cont.

Map unit symbol	Soil series	Slope percent	Soil family	Diagnostic surface and subsurface horizons	Parent material	Landform	Effective Rooting depth	Degree of surface covered by gravel (> 2mm diameter)	Drainage class	Associated vegetation	Reaction
113	Gothard variant	0-1	Typic Natrargid: fine-loamy, mixed, thermic	ochric natric	Alluvium from limestone quartzite, gneiss, granite, and shale	Alluvial fans and lakebed	30-50"	Nonstony	Somewhat poorly drained	Fourwing saltbush, eriogonam, alkali seepweed, spiny horsebrush and annuals	Strongly to Very strongly Alkaline
121	Grapevine	1-5	Typic Calciorthid: coarse loamy, mixed, thermic	ochric calcic	Calcareous alluvium from limestone, schist, shale, dolomite, quartzite and granite	Alluvial fans	60"+	Nonstony	Well-drained	Creosotebrush, yucca (Joshua tree and Spanish bayonet), cacti, eriogonam, white bursage, Mormon tea, catclaw and annuals	Moderately to strongly alkaline
114	Knob Hill	2-15	Typic Calciorthid: sandy, mixed, thermic	ochric calcic cambic	Alluvium from dolomite, quartzite limestone, gneiss and schist	Alluvial fans and low hills	60"+	Nonstony	Somewhat excessively drained	Fourwing saltbush, desert holly, plantain, creosotebush, shadscale, white bursage and desert trumpet	Moderately to strongly alkaline
105 106 108 115 116 117 118 119 120 121	Nickel	1-50	Typic Calciorthid: loamy-skeletal, mixed, thermic	ochric calcic	Alluvium derived from quartzite, dolomite limestone, gneiss, schist and granite	Alluvial fans and terraces	60"+	60-70%	Well-drained	Creosotebush, yucca, cacti, white bursage eriogonam, Mormon tea blackbrush and annuals	Moderately to strongly alkaline

GENETIC KEY TO SOILS cont.

Map unit symbol	Soil series	Slope percent	Soil family	Diagnostic surface and subsurface horizons	Parent material	Landform	Effective Rooting depth	Degree of surface Covered by gravel (> 2mm diameter)	Drainage class	Associated vegetation	Reactions
122 123	St. Thomas	30-75	Lithic Torriorthent: loamy-skeletal carbonatic, thermic	ochric	Residuum	Low hills and low mountains	4-20"	Nonstony	Well-drained	Creosotebush, yucca, white bursage, Mormon tea, blackbrush, desert trumpet, cacti, annual grasses and perennial grasses	Moderately to strongly alkaline
122 125	Tecopa	15-75	Typic Torriorthent: loamy-skeletal, mixed, (calcareous) thermic	ochric	Residuum from quartzite, schist, gneiss and basalt	Low hills and low mountains	4-20"	75-80%	Well-drained	Creosotebush, yucca, cacti, white bursage, Mormon tea, and blackbrush	Moderately alkaline
126	Theriot	30-75	Lithic Torriorthent: loamy-skeletal carbonatic, mesic	ochric	Weathered limestone and dolomite	Mountains and hills	4-20"	80%	Well-drained	Blackbrush, rabbit brush, yucca, Mormon tea, cacti, snakeweed galleta, bitterbrush, scattered juniper and cheatgrass	Moderately alkaline
124	Haplustoll	30-75	Haplustoll:	mollic none	Weathered granite	Mountains	4-20"	50%	Well-drained	Sagebrush (tridentata) bitterbrush, ephedra blackbrush, cheatgrass scattered juniper and pinon pine	Neutral

GENETIC KEY TO SOILS cont.

Map unit symbol	Soil series	Slope percent	Soil family	Diagnostic surface and subsurface horizons	Parent material	Landform	Effective Rooting depth	Degree of surface covered by gravel (> 2mm diameter)	Drainage class	Associated vegetation	Reaction
124	Virgin Peak	30-75	Lithic Haplustoll: loamy-skeletal, mixed, mesic	mollic none	Weathered granite	Mountains	4-20"	Nonstony	Well-drained	Sagebrush (tridentata) bitterbrush, ephedra, blackbrush, cheatgrass, scattered juniper and pinon pine	Neutral

Soil Interpretations

Soil Interpretations (from forms 5 and 6)

INTERPRETATIONS INFORMATION

The following interpretative information was compiled according to guidelines and criteria set forth in USDA National Soils Handbook (1978).

Form 5's included were furnished by the Soil Conservation Service (SCS) and the tabular (Form 6) interpretation data (Tables C, F-H, J-N, P and U) were generated by SCS at Ames, Iowa. Data for these forms were compiled by Mr. Lou Langan, Soil Scientist from the West Technical Service Center at Portland, Oregon.

At the time this survey report was completed, Form 5's for Blackmount, Theriot, and Tecopa were not available from the SCS as they were in the compilation/review stage. They will be amended upon receipt of the forms.

SOIL SURVEY INTERPRETATIONS

ARIZO SERIES

MLRA(S): 30
REV. LLS, 2-76
TYPIC TORRIORTHENTS, SANDY-SKELETAL, MIXED, THERMIC

ARIZO SERIES CONSISTS OF DEEP, EXCESSIVELY-DRAINED SOILS. THEY HAVE FORMED IN MIXED, VERY GRAVELLY SANDY ALLUVIUM ON RECENT ALLUVIAL FANS AND ON FLOORS OF ARROYOS AND DRY WASHES. THEIR PROFILES HAVE 2 MAIN PARTS: (1) LIGHT BROWNISH-GRAY GRAVELLY FINE SAND, ABOUT 8 INCHES THICK; (2) LIGHT BROWNISH-GRAY, STRATIFIED, LOOSE, VERY GRAVELLY SAND AND COBBLY COARSE SAND TO 60 IN. ELEVATIONS ARE 750 TO 4000 FT. MAAT IS ABOUT 57 TO 67 F. MAP IS 4 TO 10 INCHES. FFS IS ABOUT 200 TO 290 DAYS. SLOPES ARE 0 TO 15 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-8	GR-FS, GR-LS, GRV-LS	SP-SM, SM	A-1	0-15	60-70	25-55	15-25	5-15	-	NP
0-8	FS	SM	A-2	0	100	95-100	65-75	20-30	-	NP
0-8	VFSL	ML, CL-ML	A-4	0	100	95-100	80-90	50-60	15-25	NP-5
8-60	SR-CB-COS-GRV-LS	GP-GM, GP	A-1	0-35	35-55	20-50	10-30	0-10	-	NP

DEPTH (IN.)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	CORROSIVITY STEEL	CORROSIVITY CONCRETE	EROSION FACTORS K	EROSION FACTORS T	WIND EROD. GROUP
0-8	>6.0	0.05-0.07	7.4-9.0	-	LOW	MODERATE	LOW	.10	5	4
0-8	6.0-20	0.05-0.07	7.4-9.0	-	LOW	MODERATE	LOW	.15	5	1
0-8	0.6-2.0	0.15-0.17	7.4-9.0	-	LOW	MODERATE	LOW	.43	5	5
8-60	>20	0.04-0.06	7.4-9.0	-	LOW	MODERATE	LOW	.10		

FLOODING FREQUENCY	FLOODING DURATION	FLOODING MONTHS	HIGH WATER TABLE DEPTH (FT)	HIGH WATER TABLE KIND	HIGH WATER TABLE MONTHS	CEMENTED PAN DEPTH (IN)	CEMENTED PAN HARDNESS	BEDROCK DEPTH (IN)	BEDROCK HARDNESS	SUBSIDENCE INIT. (IN)	SUBSIDENCE TOTAL (IN)	HYD GRP	POTENT'L FROST ACTION
COMMON	V. BRIEF	MAR-SEP	>6.0			-		>60		-		A	LOW

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	SEVERE-FLOODS
SEWAGE LAGOON AREAS	0-7%: SEVERE-SEEPAGE, FLOODS 7+%: SEVERE-SEEPAGE, FLOODS, SLOPE
SANITARY LANDFILL (TRENCH)	SEVERE-FLOODS, SEEPAGE, TOO SANDY
SANITARY LANDFILL (AREA)	SEVERE-FLOODS, SEEPAGE
DAILY COVER FOR LANDFILL	POOR-SMALL STONES

COMMUNITY DEVELOPMENT

SHALLOW EXCAVATIONS	SEVERE-FLOODS, SMALL STONES, CUTBANKS CAVE
DWELLINGS WITHOUT BASEMENTS	SEVERE-FLOODS
DWELLINGS WITH BASEMENTS	SEVERE-FLOODS
SMALL COMMERCIAL BUILDINGS	0-8%: SEVERE-FLOODS 8+%: SEVERE-SLOPE, FLOODS
LOCAL ROADS AND STREETS	SEVERE-FLOODS
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	

SOURCE MATERIAL

ROADFILL	GOOD
SAND	UNSUITED
GRAVEL	GOOD
TOPSOIL	VFSL: FAIR-THIN LAYER FS: POOR-TOO SANDY GR, GRV: POOR-SMALL STONES, TOO SANDY

WATER MANAGEMENT

POND RESERVOIR AREA	0-2%: SEEPAGE 2+%: SLOPE, SEEPAGE
EMBANKMENTS DIKES AND LEVEES	SEEPAGE
EXCAVATED PONDS AQUIFIER FED	NO WATER
DRAINAGE	
IRRIGATION	
TERRACES AND DIVERSIONS	0-2%: TOO SANDY, SMALL STONES 2+%: SLOPE, TOO SANDY, SMALL STONES
GRASSED WATERWAYS	

REGIONAL INTERPRETATIONS

ARIZO SERIES

NV0029

RECREATION

CAMP AREAS	FS,VFSL: SEVERE-FLOODS GR-GRV: SEVERE-FLOODS,SMALL STONES	PLAYGROUNDS	VFSL: SEVERE-FLOODS,DUSTY FS: SEVERE-FLOODS,TOO SANDY,SOIL BLOWING 0-6% GR,GRV: SEVERE-FLOODS,SMALL STONES 6+% GR,GRV: SEVERE-SLOPE,FLOODS,SMALL STONES
PICNIC AREAS	VFSL: SEVERE-DUSTY FS: SEVERE-TOO SANDY,SOIL BLOWING 0-8% GR: MODERATE-FLOODS,SMALL STONES 8+% GR: MODERATE-SLOPE,FLOODS,SMALL STONES GRV: SEVERE-SMALL STONES	PATHS AND TRAILS	VFSL: SEVERE-DUSTY FS,GR: SEVERE-TOO SANDY,SOIL BLOWING GRV: SEVERE-SMALL STONES

CAPABILITY AND PREDICTED YIELDS -- CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

CLASS-DETERMINING PHASE	CAPABILITY													
	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.
ALL	7S													

WOODLAND SUITABILITY

CLASS-DETERMINING PHASE	ORD SYM	MANAGEMENT PROBLEMS					POTENTIAL PRODUCTIVITY		TREES TO PLANT
		EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORT'Y.	WINDTH. HAZARD	PLANT COMPET.	IMPORTANT TREES	SITE INDEX	
							NONE		

WINDBREAKS

CLASS-DETERMINING PHASE	SPECIES	HT	SPECIES	HT	SPECIES	HT	SPECIES	HT
ALL	ARIZONA CYPRESS	30	ATHEL	25	OLEANDER	12	TAMARISK	15

WILDLIFE HABITAT SUITABILITY

CLASS-DETERMINING PHASE	POTENTIAL FOR HABITAT ELEMENTS								POTENTIAL AS HABITAT FOR:			
	GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	OPENLD WILDLF	WOODLD WILDLF	WETLAND WILDLF	RANGELD WILDLF
ALL	V. POOR	V. POOR	V. POOR	-	-	V. POOR	V. POOR	V. POOR	V. POOR	-	V. POOR	V. POOR

POTENTIAL NATIVE PLANT COMMUNITY (RANGELAND OR FOREST UNDERSTORY VEGETATION)

COMMON PLANT NAME	PLANT SYMBOL (NLSPN)	PERCENTAGE COMPOSITION (DRY WEIGHT) BY CLASS DETERMINING PHASE				
		ALL				
CREOSOTEBUSH	LADI2	20				
WHITE BURSAGE	FRDU	8				
DESERTWILLOW	CHLI2	5				
ACACIA	ACACI	5				
MESQUITE	PRJU	5				
BIG GALLETA	HIRI	7				
INDIAN RICEGRASS	ORHY	5				
WHITE BURROBRUSH	HYSA	5				
FREMONT DALEA	DAFR	5				
OTHER SHRUBS	SSSS	20				
OTHER PERENNIAL FORBS	PPFF	5				
OTHER ANNUAL GRASSES	AAGG	5				
OTHER ANNUAL FORBS	AAFF	5				

POTENTIAL PRODUCTION (LBS./AC. DRY WT):					
FAVORABLE YEARS	125				
NORMAL YEARS	100				
UNFAVORABLE YEARS	50				

FOOTNOTES

1 RAPIDLY PERMEABLE SUBSTRATA MAY CAUSE POLLUTION OF NEARBY WATER SUPPLIES.

CA0820

SOIL INTERPRETATIONS RECORD

MLRA(S): 30
REV. 05-79

BITTER SERIES

BITTER SERIES CONSISTS OF DEEP WELL DRAINED SOILS FORM IN MIXED VERY GRAVELLY ALLUVIUM ON OLD ALLUVIAL FANS. TYPICALLY THEY HAVE PALE BROWN VERY GRAVELLY SANDY LOAM SURFACE LAYER ABOUT 3 INCHES THICK. A LIGHT BROWN AND REDDISH YELLOW VERY GRAVELLY SANDY LOAM ABOUT 13 INCHES THICK. A PINKISH GRAY VERY GRAVELLY LOAMY SAND UPPER SUBSTRATUM GRADING INTO A HIGHLY CALCAREOUS LIGHT GRAY VERY GRAVELLY SAND. ELEV IS 2000 TO 3600 FT. MAAT IS 57 TO 67F., MAP IS 4 TO 8 INCHES. SLOPES RANGE FROM 2 TO 30 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-3	GRV-SL	GP-GM, GM	A-1	0-10	25-45	25-40	15-30	5-15	-	NP
0-3	GR-SL	GM, SM	A-1, A-2	0-10	50-80	50-75	35-50	15-30	-	NP
3-17	GRV-SL, GRV-SCL, GRV-L	GM-GC, GC	A-2, A-1	0-10	25-45	25-40	20-35	10-30	20-30	5-15
17-60	GRV-LS, GRV-S, CBV-S	GP, GP-GM, SM, SP-SM	A-1	10-50	30-75	30-70	15-45	0-20	-	NP

DEPTH (IN.)	CLAY (PCT <2MM)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
0-3	5-10		2.0-6.0	0.05-0.07	7.9-9.0	<2	LOW	.15	5	8	<.5	HIGH	LOW
0-3	5-10		2.0-6.0	0.08-0.10	7.9-9.0	<2	LOW	.24	5	5	<.5		
3-17	18-27		0.2-0.6	0.07-0.09	7.9-9.0	<2	MODERATE	.15					
17-60	0-5		>20	0.03-0.05	7.9-9.0	<8	LOW	.10					

FLOODING FREQUENCY	DURATION	MONTHS	HIGH WATER TABLE DEPTH (FT)	KIND	MONTHS	CEMENTED PAN DEPTH (IN)	HARDNESS	BEDROCK DEPTH (IN)	HARDNESS	SUBSIDENCE INIT. (IN)	TOTAL (IN)	HYD GRP	POTENT'L FROST ACTION
NONE			>6.0			-		>60		-		B	-

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	2-15%: SEVERE-POOR FILTER 15+%: SEVERE-POOR FILTER,SLOPE
SEWAGE LAGOON AREAS	2-7%: SEVERE-SEEPAGE 7+%: SEVERE-SEEPAGE,SLOPE
SANITARY LANDFILL (TRENCH)	2-15%: SEVERE-SEEPAGE,TOO SANDY 15+%: SEVERE-SEEPAGE,SLOPE,TOO SANDY
SANITARY LANDFILL (AREA)	2-15%: SEVERE-SEEPAGE 15+%: SEVERE-SEEPAGE,SLOPE
DAILY COVER FOR LANDFILL	POOR-SEEPAGE,TOO SANDY,SMALL STONES

CONSTRUCTION MATERIAL

ROADFILL	2-15%: FAIR-LARGE STONES 15-25%: FAIR-LARGE STONES,SLOPE 25+%: POOR-SLOPE
SAND	PROBABLE
GRAVEL	PROBABLE
TOPSOIL	2-15%: POOR-SMALL STONES,AREA RECLAIM 15+%: POOR-SMALL STONES,AREA RECLAIM,SLOPE

WATER MANAGEMENT

POND RESERVOIR AREA	2-8%: SEVERE-SEEPAGE 8+%: SEVERE-SEEPAGE,SLOPE
EMBANKMENTS DIKES AND LEVEES	SEVERE-SEEPAGE
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	2-3%: LARGE STONES,DROUGHTY 3+%: LARGE STONES,DROUGHTY,SLOPE
TERRACES AND DIVERSIONS	2-8%: LARGE STONES,TOO SANDY 8+%: SLOPE,LARGE STONES,TOO SANDY
GRASSED WATERWAYS	2-8%: LARGE STONES,DROUGHTY 8+%: LARGE STONES,SLOPE,DROUGHTY

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	2-15%: SEVERE-CUTBANKS CAVE 15+%: SEVERE-CUTBANKS CAVE,SLOPE
DWELLINGS WITHOUT BASEMENTS	2-8%: MODERATE-LARGE STONES 8-15%: MODERATE-SLOPE,LARGE STONES 15+%: SEVERE-SLOPE
DWELLINGS WITH BASEMENTS	2-8%: MODERATE-LARGE STONES 8-15%: MODERATE-SLOPE,LARGE STONES 15+%: SEVERE-SLOPE
SMALL COMMERCIAL BUILDINGS	2-4%: MODERATE-LARGE STONES 4-8%: MODERATE-SLOPE,LARGE STONES 8+%: SEVERE-SLOPE
LOCAL ROADS AND STREETS	2-8%: MODERATE-LARGE STONES 8-15%: MODERATE-SLOPE,LARGE STONES 15+%: SEVERE-SLOPE
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	2-15% GR: SEVERE-DROUGHTY 15+% GR: SEVERE-DROUGHTY,SLOPE 2-15% GRV: SEVERE-SMALL STONES,DROUGHTY 15+% GRV: SEVERE-SMALL STONES,DROUGHTY,SLOPE

REGIONAL INTERPRETATIONS

RECREATIONAL DEVELOPMENT

CAMP AREAS	2-8% GR: MODERATE-SMALL STONES 8-15% GR: MODERATE-SLOPE,SMALL STONES 15+% GR: SEVERE-SLOPE 2-15% GRV: SEVERE-SMALL STONES 15+% GRV: SEVERE-SLOPE,SMALL STONES	PLAYGROUNDS	2-6%: SEVERE-SMALL STONES 6+%: SEVERE-SLOPE,SMALL STONES
PICNIC AREAS	2-8% GR: MODERATE-SMALL STONES 8-15% GR: MODERATE-SLOPE,SMALL STONES 15+% GR: SEVERE-SLOPE 2-15% GRV: SEVERE-SMALL STONES 15+% GRV: SEVERE-SLOPE,SMALL STONES	PATHS AND TRAILS	2-15% GR: SLIGHT 15-25% GR: MODERATE-SLOPE 25+% GR: SEVERE-SLOPE 2-25% GRV: SEVERE-SMALL STONES 25+% GRV: SEVERE-SLOPE,SMALL STONES

CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

CLASS-DETERMINING PHASE	CAPABILITY															
	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.
ALL	7S															

WOODLAND SUITABILITY

CLASS-DETERMINING PHASE	ORD SYM	MANAGEMENT PROBLEMS: EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORT'Y.	WINDTH. HAZARD	PLANT COMPET.	POTENTIAL PRODUCTIVITY: COMMON TREES	SITE INDX	TREES TO PLANT
							NONE		

WINDBREAKS

CLASS-DETERMINING PHASE	SPECIES	HT	SPECIES	HT	SPECIES	HT	SPECIES	HT
ALL	RUSSIAN-OLIVE	30	ARIZONA CYPRESS	30	ALLEPO PINE	40	OLEANDER	12

WILDLIFE HABITAT SUITABILITY

CLASS-DETERMINING PHASE	POTENTIAL FOR HABITAT ELEMENTS: GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	POTENTIAL AS HABITAT FOR: OPENLD WILDLF	WOODLD WILDLF	WETLAND WILDLF	RANGELD WILDLF
ALL	V. POOR	V. POOR	V. POOR	-	-	V. POOR	V. POOR	V. POOR	V. POOR	-	V. POOR	V. POOR

POTENTIAL NATIVE PLANT COMMUNITY (RANGELAND OR FOREST UNDERSTORY VEGETATION)

COMMON PLANT NAME	PLANT SYMBOL (NLSPN)	PERCENTAGE COMPOSITION (DRY WEIGHT) BY CLASS DETERMINING PHASE: WARM	COOL			
CREOSOTEBUSH	LADI2	30	20			
WHITE BURSAGE	FRDU	15	10			
BIG GALLETA	HIRI	5	8			
INDIAN RICEGRASS	ORHY	5	5			
CACTUS	OPUNT	5	5			
OTHER SHRUBS	SSSS	5	5			
OTHER PERENNIAL FORBS	PPFF	10	10			
OTHER PERENNIAL GRASSES	PPGG	5	5			
OTHER ANNUAL FORBS	AAFF	10	10			
OTHER ANNUAL GRASSES	AAGG	5	7			
BLACKBRUSH	CORA	-	10			
NEVADA EPHEDRA	EPNE	5	5			
POTENTIAL PRODUCTION (LBS./AC. DRY WT):						
FAVORABLE YEARS		230	300			
NORMAL YEARS		170	200			
UNFAVORABLE YEARS		100	100			

FOOTNOTES

SOIL INTERPRETATIONS RECORD

MLRA(S): 30
REV. EAM, 6-79
TYPIC TORRIPSAMMENTS, MIXED, THERMIC

BLUEPOINT SERIES

BLUEPOINT SERIES CONSIST OF DEEP SOMEWHAT EXCESSIVELY DRAINED SOILS ON ALLUVIAL FANS AND STREAM TERRACES WHICH HAVE FORMED IN SANDY ALLUVIUM FROM MIXED ROCKS. THEIR PROFILES HAVE 3 MAIN PARTS: (1) LIGHT REDDISH BROWN LOAMY FINE SAND 9 INCHES THICK; (2) PINK STRATIFIED LOAMY FINE SAND AND FINE SAND 32 INCHES THICK; (3) PINK STRATIFIED LOAMY FINE SAND AND VERY FINE SANDY LOAM TO 80 INCHES. ELEVATIONS ARE 1,400 TO 5,000 FEET. MAAT IS 56 TO 66 F. MAP 4 TO 10 INCHES. FFS IS 120 TO 270 DAYS. SLOPES ARE 0 TO 15 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-9	LFS, LS	SM	A-2	0	90-100	90-100	50-85	20-35	-	NP
0-9	FSL	SM	A-4	0	90-100	90-100	75-85	35-45	-	NP
9-41	LFS, FS	SM	A-2	0	90-100	90-100	70-80	15-25	-	NP
41-80	SR-LFS-VFSL	SM	A-2, A-4	0	90-100	90-100	75-85	30-45	-	NP

DEPTH (IN.)	CLAY (PCT <2MM)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
0-9	3-8		6.0-20	0.07-0.09	7.9-9.0	<4	LOW	.15	5	2	<.5	HIGH	HIGH
0-9	5-12		2.0-6.0	0.10-0.12	7.9-9.0	<4	LOW	.32	5	3	<.5		
9-41	0-5		6.0-20	0.07-0.09	7.9-9.0	<8	LOW	.15					
41-80	3-10		2.0-6.0	0.10-0.12	7.9-9.0	<8	LOW	.20					

FLOODING FREQUENCY	DURATION	MONTHS	HIGH WATER TABLE DEPTH (FT)	KIND	MONTHS	CEMENTED PAN DEPTH (IN)	HARDNESS	BEDROCK DEPTH (IN)	HARDNESS	SUBSIDENCE INIT. (IN)	TOTAL (IN)	HYD GRP	POTENT'L FROST ACTION
RARE			26.0			-		260		-		A	-

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	SEVERE-POOR FILTER
SEWAGE LAGOON AREAS	0-7%: SEVERE-SEEPAGE, FLOODS 7+%: SEVERE-SEEPAGE, FLOODS, SLOPE
SANITARY LANDFILL (TRENCH)	SEVERE-TOO SANDY
SANITARY LANDFILL (AREA)	0-8%: MODERATE-FLOODS 8-15%: MODERATE-FLOODS, SLOPE
DAILY COVER FOR LANDFILL	POOR-TOO SANDY

CONSTRUCTION MATERIAL

ROADFILL	GOOD
SAND	IMPROBABLE-EXCESS FINES
GRAVEL	IMPROBABLE-EXCESS FINES
TOPSOIL	POOR-THIN LAYER

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	SEVERE-CUTBANKS CAVE
DWELLINGS WITHOUT BASEMENTS	SEVERE-FLOODS
DWELLINGS WITH BASEMENTS	SEVERE-FLOODS
SMALL COMMERCIAL BUILDINGS	0-8%: SEVERE-FLOODS 8+%: SEVERE-FLOODS, SLOPE
LOCAL ROADS AND STREETS	0-8%: MODERATE-FLOODS 8-15%: MODERATE-SLOPE, FLOODS
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	0-8%: MODERATE-DROUGHTY 8-15%: MODERATE-DROUGHTY, SLOPE

WATER MANAGEMENT

POND RESERVOIR AREA	0-8%: SEVERE-SEEPAGE 8+%: SEVERE-SEEPAGE, SLOPE
EMBANKMENTS DIKES AND LEVEES	SEVERE-SEEPAGE, PIPING
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	FSL: DROUGHTY, SOIL BLOWING LFS, LS: DROUGHTY, FAST INTAKE, SOIL BLOWING
TERRACES AND DIVERSIONS	0-8%: TOO SANDY, SOIL BLOWING 8+%: SLOPE, TOO SANDY, SOIL BLOWING
GRASSED WATERWAYS	0-8%: DROUGHTY 8+%: SLOPE, DROUGHTY

3

REGIONAL INTERPRETATIONS

RECREATIONAL DEVELOPMENT

CAMP AREAS	SEVERE-FLOODS	PLAYGROUNDS	0-2%: SLIGHT 2-6%: MODERATE-SLOPE 6+%: SEVERE-SLOPE
PICNIC AREAS	0-8%: SLIGHT 8-15%: MODERATE-SLOPE	PATHS AND TRAILS	SLIGHT

CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

CLASS-DETERMINING PHASE	CAPABILITY		ALFALFA HAY (TONS)		BARLEY (BU)		PASTURE (AUM)		CORN SILAGE (TONS)		WHEAT (BU)					
	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.
0-4%	7S	2S		7		50		15		18		40				
4-8%	7S	3S		6		50		15		18		40				
8+%	7S	4S		6				12								

WOODLAND SUITABILITY

CLASS-DETERMINING PHASE	ORD SYM	MANAGEMENT PROBLEMS: EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORT'Y.	WINDTH. HAZARD	PLANT COMPET.	POTENTIAL PRODUCTIVITY: COMMON TREES	SITE INDX	TREES TO PLANT
							NONE		

WINDBREAKS

CLASS-DETERMINING PHASE	SPECIES	HT	SPECIES	HT	SPECIES	HT	SPECIES	HT
ALL	ATHEL	25	OLEANDER	12	ARIZONA CYPRESS	30	LOMBARDY POPLAR	70

WILDLIFE HABITAT SUITABILITY

CLASS-DETERMINING PHASE	POTENTIAL FOR HABITAT ELEMENTS: GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	POTENTIAL AS HABITAT FOR: OPENLD WILDLF	WOODLD WILDLF	WETLAND WILDLF	RANGELD WILDLF
0-4% IRR	GOOD	GOOD	FAIR	-	-	FAIR	V. POOR	V. POOR	GOOD	-	V. POOR	-
4-8% IRR	FAIR	FAIR	FAIR	-	-	FAIR	V. POOR	V. POOR	FAIR	-	V. POOR	-
8+% IRR	POOR	POOR	FAIR	-	-	FAIR	V. POOR	V. POOR	POOR	-	V. POOR	-
NIRR	V. POOR	V. POOR	POOR	-	-	POOR	V. POOR	V. POOR	V. POOR	-	V. POOR	POOR

POTENTIAL NATIVE PLANT COMMUNITY (RANGELAND OR FOREST UNDERSTORY VEGETATION)

COMMON PLANT NAME	PLANT SYMBOL (NLSPN)	PERCENTAGE COMPOSITION (DRY WEIGHT) BY CLASS DETERMINING PHASE: ALL				
CREOSOTEBUSH	LADI2	15				
WHITE BURSAGE	FRDU	10				
CLARETCUP CACTUS	ECTR	7				
YUCCA	YUCCA	5				
BURROWEED	HATE	4				
RANGE RATANY	KRPAG	3				
JOSHUA-TREE	YUBR	3				
NEVADA EPHEDRA	EPNE	3				
BIG GALLETA	HIRI	10				
INDIAN RICEGRASS	ORHY	5				
DESERT NEEDLEGRASS	STSP3	5				
BUSH MUHLY	MUPO2	2				
OTHER ANNUAL GRASSES	AAGG	5				
OTHER ANNUAL FORBS	AAFF	15				
OTHER PERENNIAL FORBS	PPFF	8				
POTENTIAL PRODUCTION (LBS./AC. DRY WT):						
FAVORABLE YEARS		375				
NORMAL YEARS		225				
UNFAVORABLE YEARS		100				

FOOTNOTES

* PERMEABILITY NOT USED AS LIMITING CRITERIA DUE TO ARID CLIMATE

SOIL INTERPRETATIONS RECORD

MLRA(S): 30, 17
REV. JR.LAU, 6-79
TYPIC TORRIPSAMMENTS, MIXED, THERMIC

CAJON SERIES

THE CAJON SERIES CONSISTS OF DEEP SOMEWHAT EXCESSIVELY DRAINED SOILS. THEY ARE FORMING IN ALLUVIAL FANS AT ELEVATIONS OF 400 TO 3500 FEET. A TYPICAL PROFILE HAS LIGHT BROWNISH-GRAY AND LIGHT GRAY FINE COARSE SAND TO A DEPTH OF 60 INCHES. THE MEAN ANNUAL PRECIPITATION IS 4 TO 9 INCHES. THE MEAN ANNUAL TEMPERATURE IS 62 TO 70F. SLOPES RANGE FROM 0 TO 15 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-7	S, FS	SM, SP-SM	A-1, A-2, A-3	0	95-100	75-100	40-60	5-25	-	NP
0-7	LS, LFS	SM	A-2	0	95-100	75-100	50-80	10-30	-	NP
7-13	S, FS	SM, SP-SM	A-1, A-2, A-3	0	95-100	75-100	40-60	5-25	-	NP
13-25	LS, LFS, LCOS	SM	A-2	0	95-100	75-100	50-80	10-30	-	NP
25-45	GR-S, GR-LS	SM, SP-SM	A-1	0	60-85	50-75	25-50	5-20	-	NP
45-60	SR-S-LFS	SM, SP-SM	A-1, A-2, A-3	0	95-100	75-100	40-60	5-25	-	NP

DEPTH (IN.)	CLAY (PCT <2MM)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
0-7	0-5		6.0-20	0.06-0.08	7.4-8.4	-	LOW	.15	5	1	<1	MODERATE	LOW
0-7	0-8		6.0-20	0.06-0.10	7.4-8.4	-	LOW	.15	5	2	<1		
7-13	0-5		6.0-20	0.06-0.08	7.4-8.4	-	LOW	.15					
13-25	0-8		6.0-20	0.06-0.10	7.4-8.4	-	LOW	.15					
25-45	0-5		6.0-20	0.04-0.08	7.4-8.4	-	LOW	.10					
45-60	0-5		6.0-20	0.06-0.10	7.4-8.4	-	LOW	.15					

FLOODING FREQUENCY	DURATION	MONTHS	HIGH WATER TABLE DEPTH (FT)	KIND	MONTHS	CEMENTED PAN DEPTH (IN)	HARDNESS	BEDROCK DEPTH (IN)	HARDNESS	SUBSIDENCE INIT. (IN)	TOTAL (IN)	HYD GRP	POTENT'L FROST ACTION
NONE-RARE			>6.0			-		>60		-		A	-

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	SEVERE-POOR FILTER
SEWAGE LAGOON AREAS	0-7X NONE: SEVERE-SEEPAGE 7+X NONE: SEVERE-SEEPAGE,SLOPE 0-7X RARE: SEVERE-SEEPAGE,FLOODS 7+X RARE: SEVERE-SEEPAGE,FLOODS,SLOPE
SANITARY LANDFILL (TRENCH)	SEVERE-TOO SANDY
SANITARY LANDFILL (AREA)	0-8X NONE: SLIGHT 8-15X NONE: MODERATE-SLOPE 0-8X RARE: MODERATE-FLOODS 8-15X RARE: MODERATE-FLOODS,SLOPE
DAILY COVER FOR LANDFILL	POOR-SEEPAGE,TOO SANDY

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	SEVERE-CUTBANKS CAVE
DWELLINGS WITHOUT BASEMENTS	0-8X NONE: SLIGHT 8-15X NONE: MODERATE-SLOPE RARE: SEVERE-FLOODS
DWELLINGS WITH BASEMENTS	0-8X NONE: SLIGHT 8-15X NONE: MODERATE-SLOPE RARE: SEVERE-FLOODS
SMALL COMMERCIAL BUILDINGS	0-4X NONE: SLIGHT 4-8X NONE: MODERATE-SLOPE 8+X NONE: SEVERE-SLOPE 0-8X RARE: SEVERE-FLOODS 8+X RARE: SEVERE-FLOODS,SLOPE
LOCAL ROADS AND STREETS	0-8X NONE: SLIGHT 8-15X NONE: MODERATE-SLOPE 0-8X RARE: MODERATE-FLOODS 8-15X RARE: MODERATE-SLOPE,FLOODS
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	0-8X FS,LS,LFS: MODERATE-DROUGHTY 8-15X FS,LS,LFS: MODERATE-DROUGHTY,SLOPE 0-8X S: MODERATE-DROUGHTY,TOO SANDY 8-15X S: MODERATE-DROUGHTY,SLOPE,TOO SANDY

CONSTRUCTION MATERIAL

ROADFILL	GOOD
SAND	PROBABLE
GRAVEL	IMPROBABLE-THIN LAYER
TOPSOIL	LS,LFS: POOR-SMALL STONES S,FS: POOR-TOO SANDY,SMALL STONES

WATER MANAGEMENT

POND RESERVOIR AREA	0-8X: SEVERE-SEEPAGE 8+X: SEVERE-SEEPAGE,SLOPE
EMBANKMENTS DIKES AND LEVEES	SEVERE-SEEPAGE
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	DROUGHTY,FAST INTAKE,SOIL BLOWING
TERRACES AND DIVERSIONS	0-8X: TOO SANDY,SOIL BLOWING 8+X: SLOPE,TOO SANDY,SOIL BLOWING
GRASSED WATERWAYS	0-8X: DROUGHTY 8+X: SLOPE,DROUGHTY

REGIONAL INTERPRETATIONS

RECREATIONAL DEVELOPMENT

CAMP AREAS	LS,LFS,NONE: SLIGHT S,FS,NONE: SEVERE-TOO SANDY LS,LFS,RARE: SEVERE-FLOODS S,FS,RARE: SEVERE-FLOODS,TOO SANDY	PLAYGROUNDS	0-2% LS,LFS: MODERATE-SMALL STONES 2-6% LS,LFS: MODERATE-SLOPE,SMALL STONES 6+% LS,LFS: SEVERE-SLOPE 0-6% S,FS: SEVERE-TOO SANDY 6+% S,FS: SEVERE-SLOPE,TOO SANDY
PICNIC AREAS	0-8% LS,LFS: SLIGHT 8-15% LS,LFS: MODERATE-SLOPE S,FS: SEVERE-TOO SANDY	PATHS AND TRAILS	LS,LFS: SLIGHT S,FS: SEVERE-TOO SANDY

CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

CLASS-DETERMINING PHASE	CAPABILITY		ALFALFA HAY (TONS)		PASTURE (AUM)		BARLEY (BU)									
	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.
0-9%	7E	3E		6		10		60								
9-15%	7E															

WOODLAND SUITABILITY

CLASS-DETERMINING PHASE	ORD SYM	MANAGEMENT PROBLEMS: EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORT'Y.	WINDTH. HAZARD	PLANT COMPET.	POTENTIAL PRODUCTIVITY: COMMON TREES	SITE INDX	TREES TO PLANT
							NONE		

WINDBREAKS

CLASS-DETERMINING PHASE	SPECIES	HT	SPECIES	HT	SPECIES	HT	SPECIES	HT
IRR	ARIZONA CYPRESS	35	OLEANDER	8		35	ATHEL	45
	ALLEPO PINE	35		8	POMEGRANATE	15	SIBERIAN ELM	35
	FOURWING SALTBUSH	8						

WILDLIFE HABITAT SUITABILITY

CLASS-DETERMINING PHASE	POTENTIAL FOR HABITAT ELEMENTS: GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	POTENTIAL AS HABITAT FOR: OPENLD WILDLF	WOODLD WILDLF	WETLAND WILDLF	RANGELD WILDLF
NIRR	V. POOR	V. POOR	FAIR	-	-	FAIR	V. POOR	V. POOR	POOR	-	V. POOR	FAIR
IRR	FAIR	FAIR	FAIR	-	-	FAIR	V. POOR	V. POOR	FAIR	-	V. POOR	-

POTENTIAL NATIVE PLANT COMMUNITY (RANGELAND OR FOREST UNDERSTORY VEGETATION) (A)

COMMON PLANT NAME	PLANT SYMBOL (NLSPN)	PERCENTAGE COMPOSITION (DRY WEIGHT) BY CLASS DETERMINING PHASE: PPT 4-5	PPT 5-7	PPT 7-9		
CREOSOTEBUSH	LADI2	25	15	10		
WHITE BURSAGE	FRDU	5	5	10		
MEDITERRANEAN SCHISMUS	SCBA	20	5	T		
EPHEDRA	EPHED	T	5	5		
RABBITBRUSH	CHRYS9	T	5	5		
DESERT NEEDLEGRASS	STSP3	T	5	10		
INDIAN RICEGRASS	ORHY	5	15	10		
FILAREE	ERODI	20	5	10		
RED BROME	BRRU2	5	5	5		
CACTUS	OPUNT	T	5	5		
JOSHUA-TREE	YUBR	-	5	-		
POPCORNFLOWER	PLAGI	-	5	5		
MALACOTHRIX	MALAC3	-	5	5		
POTENTIAL PRODUCTION (LBS./AC. DRY WT):						
FAVORABLE YEARS		200	400	400		
NORMAL YEARS		150	200	300		
UNFAVORABLE YEARS		100	100	200		

FOOTNOTES

A PPT 5-7 IS CA R.S. SANDY (30 F.G)

1 PERMEABILITY IS NOT A LIMITING SOIL PROPERTY IN ARID AREAS

SOIL SURVEY INTERPRETATIONS

MLRA(S): 41
REV. 4-73
TYPIC PALEORTHIDS, LOAMY, MIXED, THERMIC, SHALLOW

CAVE SERIES

THE CAVE SERIES CONSISTS OF SHALLOW, WELL DRAINED, MODERATELY PERMEABLE SOILS FORMED IN GRAVELLY MIXED ALLUVIUM ON LOW HILLS AND VALLEY FILL. TYPICALLY THESE SOILS HAVE A PALE BROWN GRAVELLY SANDY LOAM SURFACE LAYER 7 INCHES THICK AND A FINE GRAVELLY LOAM SUBSTRATUM 5 INCHES THICK OVER AN INDURATED LIME-CEMENTED HARDPAN. ELEVATIONS ARE FROM 3000 TO 4500 FEET. PRECIPITATION IS 10 TO 14 INCHES. THE FROST-FREE SEASON IS 180 TO 230 DAYS. SLOPES ARE 0 TO 30 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-12	GR-SL, GR-L	SC, SM-SC	A-4, A-2, A-6	0-5	70-90	60-80	40-65	25-50	25-30	5-15
12	IND			0						

DEPTH (IN.)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	CORROSIVITY STEEL	CORROSIVITY CONCRETE	EROSION FACTORS K	EROSION FACTORS T	WIND EROD. GROUP
0-12	0.6-2.0	0.07-0.12	7.9-8.4	<2	LOW	HIGH	LOW	.28	2	-
12										

FLOODING FREQUENCY	FLOODING DURATION	FLOODING MONTHS	HIGH WATER TABLE DEPTH (FT)	HIGH WATER TABLE KIND	HIGH WATER TABLE MONTHS	CEMENTED PAN DEPTH (IN)	CEMENTED PAN HARDNESS	BEDROCK DEPTH (IN)	BEDROCK HARDNESS	SUBSIDENCE INIT. (IN)	SUBSIDENCE TOTAL (IN)	HYD GRP	POTENT'L FROST ACTION
NONE			>6.0			4-20	RIPPABLE	>60		-		D	-

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	0-15%: SEVERE-CEMENTED PAN 15+%: SEVERE-CEMENTED PAN, SLOPE
SEWAGE LAGOON AREAS	0-7%: SEVERE-CEMENTED PAN, SMALL STONES 7+%: SEVERE-CEMENTED PAN, SMALL STONES, SLOPE
SANITARY LANDFILL (TRENCH)	0-25%: SEVERE-CEMENTED PAN 25+%: SEVERE-CEMENTED PAN, SLOPE
SANITARY LANDFILL (AREA)	0-8%: SLIGHT 8-15%: MODERATE-SLOPE 15+%: SEVERE-SLOPE
DAILY COVER FOR LANDFILL	0-15%: POOR-THIN LAYER, AREA RECLAIM 15+%: POOR-THIN LAYER, AREA RECLAIM

COMMUNITY DEVELOPMENT

SHALLOW EXCAVATIONS	0-15%: SEVERE-CEMENTED PAN 15+%: SEVERE-CEMENTED PAN, SLOPE
DWELLINGS WITHOUT BASEMENTS	0-15%: SEVERE-CEMENTED PAN 15+%: SEVERE-CEMENTED PAN, SLOPE
DWELLINGS WITH BASEMENTS	0-15%: SEVERE-CEMENTED PAN 15+%: SEVERE-CEMENTED PAN, SLOPE
SMALL COMMERCIAL BUILDINGS	0-8%: SEVERE-CEMENTED PAN 8+%: SEVERE-CEMENTED PAN, SLOPE
LOCAL ROADS AND STREETS	0-15%: SEVERE-CEMENTED PAN 15+%: SEVERE-CEMENTED PAN, SLOPE

REGIONAL INTERPRETATIONS

SOURCE MATERIAL

ROADFILL	0-25%: POOR-THIN LAYER, AREA RECLAIM 25+%: POOR-THIN LAYER, AREA RECLAIM
SAND	UNSUITED
GRAVEL	UNSUITED
TOPSOIL	0-15%: POOR-SMALL STONES, EXCESS LIME, AREA RECLAIM 15+%: POOR-SLOPE, SMALL STONES, AREA RECLAIM

WATER MANAGEMENT

POND RESERVOIR AREA	CEMENTED PAN
EMBANKMENTS DIKES AND LEVEES	THIN LAYER
EXCAVATED PONDS AQUIFIER FED	NO WATER
DRAINAGE	
IRRIGATION	
TERRACES AND DIVERSIONS	CEMENTED PAN
GRASSED WATERWAYS	

[illegible] SERIES AZ0065

RECREATION

CAMP AREAS	0-8%: MODERATE-DUSTY,SMALL STONES 8-15%: MODERATE-SLOPE,SMALL STONES,DUSTY 15+%: SEVERE-SLOPE	PLAYGROUNDS	0-2%: MODERATE-SMALL STONES,DUSTY 2-6%: MODERATE-SLOPE,SMALL STONES,DUSTY 6+%: SEVERE-SLOPE
PICNIC AREAS	0-8%: MODERATE-DUSTY,SMALL STONES 8-15%: MODERATE-SLOPE,SMALL STONES,DUSTY 15+%: SEVERE-SLOPE	PATHS AND TRAILS	0-15%: MODERATE-SMALL STONES,DUSTY 15-25%: MODERATE-SLOPE,SMALL STONES,DUSTY 25+%: SEVERE-SLOPE

CAPABILITY AND PREDICTED YIELDS -- CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

CLASS-DETERMINING PHASE	CAPABILITY															
	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.
ALL	7S	-														

WOODLAND SUITABILITY

CLASS-DETERMINING PHASE	ORD SYM	MANAGEMENT PROBLEMS: EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORT'Y.	WINDTH. HAZARD	PLANT COMPET.	POTENTIAL PRODUCTIVITY: IMPORTANT TREES	SITE INDX	TREES TO PLANT
							NONE		

WINDBREAKS

CLASS-DETERMIN'G PHASE	SPECIES	HT	SPECIES	HT	SPECIES	HT	SPECIES	HT
	NONE							

WILDLIFE HABITAT SUITABILITY

CLASS-DETERMINING PHASE	POTENTIAL FOR HABITAT ELEMENTS								POTENTIAL AS HABITAT FOR:			
	GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	OPENLD WILDLF	WOODLD WILDLF	WETLAND WILDLF	RANGELD WILDLF
ALL	V. POOR	V. POOR	POOR	-	-	POOR	V. POOR	V. POOR	V. POOR	-	V. POOR	POOR

POTENTIAL NATIVE PLANT COMMUNITY (RANGELAND OR FOREST UNDERSTORY VEGETATION)

COMMON PLANT NAME	PLANT SYMBOL (NLSPN)	PERCENTAGE COMPOSITION (DRY WEIGHT) BY CLASS DETERMINING PHASE: ALL; 12-16" P.Z.				
BLACK GRAMA	BCER4	35				
BUSH MUHLY	MUPO2	15				
SIDE-OATS GRAMA	BCCU	5				
SLIM TRIDENS	TRMU	5				
CREOSOTEBUSH 1/	LAD12	5				
WHITETHORN 1/	ACCO2	5				
FALSE MESQUITE	CAER	3				
DESERT ZINNIA 1/	ZIPU	3				
OTHER PERENNIAL GRASSES	PPGG	12				
OTHER SHRUBS	SSSS	10				
OTHER ANNUAL GRASSES	AAGG	2				
POTENTIAL PRODUCTION (LBS./AC. DRY WT):						
FAVORABLE YEARS		900				
NORMAL YEARS		600				
UNFAVORABLE YEARS		450				

FOOTNOTES

1 NOT GENERALLY UTILIZED BY CATTLE OR SHEEP.

SOIL INTERPRETATIONS RECORD

: 30
. 5-79
ORRIFLUVENTS, COARSE-LOAMY, MIXED (CALCAREOUS), THERMIC

GILA SERIES
SALINE

LINE PHASE CONSISTS OF DEEP, WELL-DRAINED SOILS FORMED IN ALLUVIUM FROM MIXED ROCK SOURCES ON FLOOD PLAINS
RACES. A TYPICAL PROFILE HAS 2 PARTS: A GRAYISH-BROWN LOAM, ABOUT 9 INCHES THICK. (2)BROWN
IED SILT LOAM TO FINE SANDY LOAM TO 60 INCHES. ELEVATION IS 1,500 TO 1,800 FEET. MAST IS 65 TO 70
IS 4 TO 6 INCHES AND FFS IS ABOUT 240 DAYS. SLOPES ARE 0 TO 2 PERCENT.

ESTIMATED SOIL PROPERTIES

USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
L	ML	A-4	0	95-100	95-100	80-90	60-70	-	NP
SH-SIL-FSL	ML	A-4	0	95-100	95-100	80-95	60-75	15-25	NP-5

CLAY PCT (<2MM)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
2-18		0.6-2.0	0.15-0.17	7.9-9.0	>16	LOW	.49	5	5	<.5	HIGH	MODERATE
8-18		0.6-2.0	0.15-0.17	7.9-9.0	>4	LOW	.49					

FLOODING FREQUENCY	DURATION	MONTHS	HIGH WATER TABLE DEPTH (FT)	KIND	MONTHS	CEMENTED PAN DEPTH (IN)	HARDNESS	BEDROCK DEPTH (IN)	HARDNESS	SUBSIDENCE INIT. (IN)	TOTAL (IN)	HYD GRP	POTENT'L FROST ACTION
USUAL	V.BRIEF	JUN-SEP	>6.0			-		>60		-		B	-

SANITARY FACILITIES

TANK TION DS	SEVERE-FLOODS
GC ON S	SEVERE-FLOODS
ARY LL H)	SEVERE-FLOODS
ARY LL)	SEVERE-FLOODS
OR LL	GOOD

CONSTRUCTION MATERIAL

ROADFILL	FAIR-LOW STRENGTH
SAND	IMPROBABLE-EXCESS FINES
GRAVEL	IMPROBABLE-EXCESS FINES
TOPSOIL	POOR-EXCESS SALT

BUILDING SITE DEVELOPMENT

ONS	SEVERE-FLOODS
ES S	SEVERE-FLOODS
ES S	SEVERE-FLOODS
AL S	SEVERE-FLOODS
D	SEVERE-FLOODS
NG P S	SEVERE-EXCESS SALT

WATER MANAGEMENT

POND RESERVOIR AREA	MODERATE-SEEPAGE
EMBANKMENTS DIKES AND LEVEES	SEVERE-PIPING,EXCESS SALT
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	FLOODS
IRRIGATION	PIPING
TERRACES AND DIVERSIONS	PIPING
GRASSED WATERWAYS	EXCESS SALT,ERODES EASILY

REGIONAL INTERPRETATIONS

RECREATIONAL DEVELOPMENT

CAMP AREAS	SEVERE-FLOODS	PLAYGROUNDS	MODERATE-FLOODS,DUSTY
PICNIC AREAS	MODERATE-FLOODS,DUSTY	PATHS AND TRAILS	MODERATE-DUSTY

CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

CLASS-DETERMINING PHASE	CAPABILITY		ALFALFA HAY (TONS)		PASTURE (AUM)		BARLEY (BU)									
	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.
ALL	7W	2W		6		12		60								

WOODLAND SUITABILITY

CLASS-DETERMINING PHASE	ORD SYM	MANAGEMENT PROBLEMS					POTENTIAL PRODUCTIVITY		TREES TO PLANT
		EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORT'Y.	WINDTH. HAZARD	PLANT COMPET.	COMMON TREES	SITE INDX	
							NONE		

WINDBREAKS

CLASS-DETERMINING PHASE	SPECIES	HT	SPECIES	HT	SPECIES	HT	SPECIES	HT
1-R	OLEANDER	12	ALLEPO PINE	40	ARIZONA CYPRESS	30	RUSSIAN-OLIVE	30

WILDLIFE HABITAT SUITABILITY

CLASS-DETERMINING PHASE	POTENTIAL FOR HABITAT ELEMENTS								POTENTIAL AS HABITAT FOR:			
	GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	OPENLD WILDLF	WOODLD WILDLF	WETLAND WILDLF	RANGELD WILDLF
1-R	GOOD	GOOD	GOOD	-	-	FAIR	FAIR	POOR	GOOD	-	POOR	FAIR
WINR	V. POOR	V. POOR	V. POOR	-	-	V. POOR	V. POOR	V. POOR	V. POOR	-	V. POOR	V. POOR

POTENTIAL NATIVE PLANT COMMUNITY (RANGELAND OR FOREST UNDERSTORY VEGETATION)

COMMON PLANT NAME	PLANT SYMBOL (NLSPN)	PERCENTAGE COMPOSITION (DRY WEIGHT) BY CLASS DETERMINING PHASE				
		DRY	MOIST			
CREOSOTEBUSH	LA012	30				
WHITE BURSAGE	FROU	10				
BIG GALLETA	HIRI	5				
INDIAN RICEGRASS	ORHY	5				
FOURWING SALTBUSH	ATCA2	5	30			
OTHER PERENNIAL GRASSES	PPGG	5	5			
OTHER PERENNIAL FORBS	PPFF	5	5			
OTHER ANNUAL GRASSES	AAGG	10	5			
OTHER ANNUAL FORBS	AAFF	10	5			
OTHER SHRUBS	SSSS	15	10			
MESQUITE	PRJU	-	30			
SEEPWEED	SUAED	-	10			
POTENTIAL PRODUCTION (LBS./AC. DRY WT):						
FAVORABLE YEARS		375	300			
NORMAL YEARS		230	225			
UNFAVORABLE YEARS		150	100			

FOOTNOTES

MLRA(S): 30
REV. RS, 6-79
TYPIC TORRIFLUVENTS, COARSE-LOAMY, MIXED (CALCAREOUS), THERMIC

GILA SERIES
WET

GILA WET PHASE CONSISTS OF DEEP SOILS FORMED IN ALLUVIUM FROM MIXED ROCK SOURCES ON FLOODPLAINS AND TERRACES. A TYPICAL PROFILE HAS 2 PARTS: A GRAYISH-BROWN LOAM SURFACE HORIZON, 9 INCHES THICK; AND (2) A BROWN STRATIFIED SILT LOAM TO FINE SANDY LOAM TO 60 INCHES. ELEVATIONS ARE 1,500 TO 1,800 FEET. MAST IS 65 TO 70 F. MAP IS 4 TO 6 INCHES. FFS IS ABOUT 240 DAYS. SLOPES ARE 0 TO 2 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-9	L, SIL	ML	A-4	0	95-100	95-100	85-95	60-70	-	NP
9-60	SR-SIL-FSL	ML	A-4	0	95-100	95-100	80-95	60-75	15-25	NP-5
60-70	LS, LFS	SM	A-2	0	95-100	95-100	60-80	20-30	—	NP

DEPTH (IN.)	CLAY (PCT) <2MM	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
0-9	12-18		0.6-2.0	0.15-0.17	>7.8	>2	LOW	.37	5	5	.5-1	HIGH	MODERATE
9-60	8-18		0.6-2.0	0.15-0.17	>7.8	>2	LOW	.49					
60-70	0-5		6.0-20	0.06-0.08	>7.8	<2	LOW	.17					

FLOODING FREQUENCY	DURATION	MONTHS	HIGH WATER TABLE DEPTH (FT)	KIND	MONTHS	CEMENTED PAN DEPTH (IN)	HARDNESS	BEDROCK DEPTH (IN)	HARDNESS	SUBSIDENCE INIT. (IN)	TOTAL (IN)	HYD GRP	POTENT'L FROST ACTION
OCCASIONAL	V. BRIEF	JUN-SEP	4.0-5.0	APPARENT	MAR-OCT	-		>60		-		B	-

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	SEVERE-FLOODS, POOR FILTER
SEWAGE LAGOON AREAS	SEVERE-FLOODS
SANITARY LANDFILL (TRENCH)	SEVERE-FLOODS, WETNESS, EXCESS SALT
SANITARY LANDFILL (AREA)	SEVERE-FLOODS
DAILY COVER FOR LANDFILL	GOOD

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	MODERATE-WETNESS, FLOODS
DWELLINGS WITHOUT BASEMENTS	SEVERE-FLOODS
DWELLINGS WITH BASEMENTS	SEVERE-FLOODS
SMALL COMMERCIAL BUILDINGS	SEVERE-FLOODS
LOCAL ROADS AND STREETS	SEVERE-FLOODS
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	SEVERE-EXCESS SALT

CONSTRUCTION MATERIAL

ROADFILL	GOOD
SAND	IMPROBABLE-EXCESS FINES
GRAVEL	IMPROBABLE-EXCESS FINES
TOPSOIL	POOR-EXCESS SALT

WATER MANAGEMENT

POND RESERVOIR AREA	MODERATE-SEEPAGE
EMBANKMENTS DIKES AND LEVEES	SEVERE-PIPING, EXCESS SALT
EXCAVATED PONDS AQUIFER FED	SEVERE-SALTY WATER, CUTBANKS CAVE
DRAINAGE	DEEP TO WATER
IRRIGATION	ERODES EASILY, FLOODS, EXCESS SALT
TERRACES AND DIVERSIONS	ERODES EASILY
GRASSED WATERWAYS	EXCESS SALT, ERODES EASILY

REGIONAL INTERPRETATIONS

RECREATIONAL DEVELOPMENT

CAMP AREAS	SEVERE-FLOODS, EXCESS SALT	PLAYGROUNDS	SEVERE-EXCESS SALT
PICNIC AREAS	SEVERE-EXCESS SALT	PATHS AND TRAILS	SEVERE-ERODES EASILY

CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

CLASS-DETERMINING PHASE	CAPABILITY		ALFALFA HAY (TONS)		PASTURE (AUM)		BARLEY (BU)									
	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.
NONSAL	7W	2W		8		16		75								
SALINE	7W	4W		6		12		70								

WOODLAND SUITABILITY

CLASS-DETERMINING PHASE	ORD SYM	MANAGEMENT PROBLEMS: EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORT'Y.	WINDTH. HAZARD	PLANT COMPET.	POTENTIAL PRODUCTIVITY: COMMON TREES	SITE INDX	TREES TO PLANT
							NONE		

WINDBREAKS

CLASS-DETERMINING PHASE	SPECIES	HT	SPECIES	HT	SPECIES	HT	SPECIES	HT
IRR	OLEANDER	12	ALLEPO PINE	40	ARIZONA CYPRESS	30	RUSSIAN-OLIVE	30

WILDLIFE HABITAT SUITABILITY

CLASS-DETERMINING PHASE	POTENTIAL FOR HABITAT ELEMENTS: GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	POTENTIAL AS HABITAT FOR: OPENLD WILDLF	WOODLD WILDLF	WETLAND WILDLF	RANGELD WILDLF
IRR, NONSAL	GOOD	GOOD	GOOD	-	-	FAIR	FAIR	FAIR	GOOD	-	FAIR	FAIR
NIRR	V. POOR	V. POOR	V. POOR	-	-	V. POOR	POOR	FAIR	V. POOR	-	POOR	V. POOR
IRR, SALINE	POOR	FAIR	FAIR	-	-	FAIR	FAIR	FAIR	FAIR	-	FAIR	FAIR

POTENTIAL NATIVE PLANT COMMUNITY (RANGELAND OR FOREST UNDERSTORY VEGETATION)

COMMON PLANT NAME	PLANT SYMBOL (NLSPN)	PERCENTAGE COMPOSITION (DRY WEIGHT) BY CLASS DETERMINING PHASE: ALL				
ALKALI SACATON	SPAI	20				
INLAND SALTGRASS	DIST	15				
BIG SALTBUSH	ATLE	10				
RUSH	JUNCU	10				
FOURWING SALTBUSH	ATCA2	7				
GIANTREED	ARDO4	5				
MESQUITE	PRJU	5				
OTHER PERENNIAL FORBS	PPFF	5				
OTHER ANNUAL FORBS	AAFF	5				
OTHER ANNUAL GRASSES	AAGG	5				
OTHER SHRUBS	SSSS	8				
OTHER PERENNIAL GRASSES	PPGG	5				
POTENTIAL PRODUCTION (LBS./AC. DRY WT): FAVORABLE YEARS		1300				
NORMAL YEARS		650				
UNFAVORABLE YEARS		400				

FOOTNOTES

SOIL SURVEY INTERPRETATIONS

[illegible]

[illegible] 41
[illegible] 8-73
TYPIC NATRARGIDS, FINE-LOAMY, MIXED, THERMIC

GOTHARD SERIES

THE GOTHARD SERIES CONSISTS OF DEEP, MODERATELY WELL-DRAINED, SLOWLY PERMEABLE, STRONGLY SALINE-ALKALI AFFECTED SOILS FORMED IN MIXED ALLUVIUM ON THE BORDERS OF PLAYAS. TYPICALLY, THESE SOILS HAVE A LIGHT BROWNISH-GRAY, FINE SANDY LOAM SURFACE LAYER, 5 INCHES THICK, OVER A PALE BROWN LIGHT CLAY LOAM SUBSOIL, 37 INCHES THICK. THE SUBSTRATUM IS LIGHT GRAY AND BROWNISH-GRAY SANDY LOAM TO 60 INCHES. ELEVATIONS ARE FROM 3800 TO 4300 FEET. PRECIPITATION IS 10 TO 12 INCHES. THE FROST-FREE SEASON IS 155 TO 220 DAYS. SLOPES ARE 0 TO 2 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-5	FSL	SM, SM-SC	A-4	0	100	100	75-85	40-50	20-30	NP-10
5-42	CL, L	CL	A-6	0	100	100	85-100	65-80	35-40	20-25
42-60	SL	SM	A-4	0	100	100	65-75	35-45	20-30	NP-5

DEPTH (IN.)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	CORROSIVITY STEEL	CORROSIVITY CONCRETE	EROSION FACTORS K	EROSION FACTORS T	WIND EROD. GROUP
0-5	0.6-2.0	0.13-0.15	6.5-9.0	>4	LOW	HIGH	HIGH	-	-	-
5-42	0.06-0.2	0.13-0.18	>9.0	>4	MODERATE	HIGH	HIGH	-		
42-60	0.6-2.0	0.06-0.08	>9.0	>4	LOW	HIGH	HIGH	-		

FLOODING FREQUENCY	FLOODING DURATION	FLOODING MONTHS	HIGH WATER TABLE DEPTH (FT)	HIGH WATER TABLE KIND	HIGH WATER TABLE MONTHS	CEMENTED PAN DEPTH (IN)	CEMENTED PAN HARDNESS	BEDROCK DEPTH (IN)	BEDROCK HARDNESS	SUBSIDENCE INIT. (IN)	SUBSIDENCE TOTAL (IN)	HYD GRP	POTENT'L FROST ACTION
RARE			>6.0			-		>60		-		D	-

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	PROTECTED: SEVERE-PERCS SLOWLY RARE: SEVERE-FLOODS,PERCS SLOWLY
SEWAGE LAGOON AREAS	PROTECTED: SLIGHT RARE: SEVERE-FLOODS
SANITARY LANDFILL (TRENCH)	PROTECTED: MODERATE-TOO CLAYEY RARE: MODERATE-TOO CLAYEY,FLOODS
SANITARY LANDFILL (AREA)	PROTECTED: SLIGHT RARE: MODERATE-FLOODS
DAILY COVER FOR LANDFILL	FAIR-TOO CLAYEY

COMMUNITY DEVELOPMENT

SHALLOW EXCAVATIONS	PROTECTED: MODERATE-CUTBANKS CAVE,TOO CLAYEY RARE: MODERATE-CUTBANKS CAVE,FLOODS, TOO CLAYEY
DWELLINGS WITHOUT BASEMENTS	PROTECTED: MODERATE-LOW STRENGTH RARE: SEVERE-FLOODS
DWELLINGS WITH BASEMENTS	PROTECTED: MODERATE-LOW STRENGTH RARE: SEVERE-FLOODS
SMALL COMMERCIAL BUILDINGS	PROTECTED: MODERATE-LOW STRENGTH,CORROSIVE RARE: SEVERE-FLOODS,CORROSIVE
LOCAL ROADS AND STREETS	PROTECTED: MODERATE-LOW STRENGTH RARE: SEVERE-FLOODS
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	

SOURCE MATERIAL

ROADFILL	FAIR-LOW STRENGTH
SAND	UNSUITED
GRAVEL	UNSUITED
TOPSOIL	POOR-EXCESS SALT,EXCESS SODIUM

WATER MANAGEMENT

POND RESERVOIR AREA	FAVORABLE
EMBANKMENTS DIKES AND LEVEES	LOW STRENGTH,SHRINK-SWELL
EXCAVATED PONDS AQUIFIER FED	NO WATER
DRAINAGE	EXCESS SALT,EXCESS SODIUM,PERCS SLOWLY
IRRIGATION	EXCESS SALT,EXCESS SODIUM,PERCS SLOWLY
TERRACES AND DIVERSIONS	PERCS SLOWLY
GRASSED WATERWAYS	

REGIONAL INTERPRETATIONS

RECREATION

CAMP AREAS	PROTECTED: MODERATE-PERCS SLOWLY,DUSTY RARE: MODERATE-PERCS SLOWLY,DUSTY,FLOODS	PLAYGROUNDS	PROTECTED: MODERATE-PERCS SLOWLY,DUSTY RARE: MODERATE-PERCS SLOWLY,DUSTY,FLOODS
PICNIC AREAS	MODERATE-DUSTY	PATHS AND TRAILS	MODERATE-DUSTY

CAPABILITY AND PREDICTED YIELDS -- CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

CLASS-DETERMINING PHASE	CAPABILITY		TALL FESCUE (AUM)		COMMON BERMUDAGRASS (AUM)											
	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.
ALL	7S	4S		14		12										

WOODLAND SUITABILITY

CLASS-DETERMINING PHASE	ORD SYM	MANAGEMENT PROBLEMS					POTENTIAL PRODUCTIVITY		TREES TO PLANT
		EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORT'Y.	WINDTH. HAZARD	PLANT COMPET.	IMPORTANT TREES	SITE INDX	
							NONE		

WINDBREAKS

CLASS-DETERMINING PHASE	SPECIES	HT	SPECIES	HT	SPECIES	HT	SPECIES	HT
	NONE							

WILDLIFE HABITAT SUITABILITY

CLASS-DETERMINING PHASE	POTENTIAL FOR HABITAT ELEMENTS								POTENTIAL AS HABITAT FOR:			
	GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	OPENLD WILDLF	WOODLD WILDLF	WETLAND WILDLF	RANGELD WILDLF
NIRR	-	-	V. POOR	-	-	V. POOR	-	-	-	-	-	V. POOR
IRR	POOR	POOR	V. POOR	-	-	V. POOR	POOR	-	POOR	-	POOR	-

POTENTIAL NATIVE PLANT COMMUNITY (RANGELAND OR FOREST UNDERSTORY VEGETATION)

COMMON PLANT NAME	PLANT SYMBOL (NLSPN)	PERCENTAGE COMPOSITION (DRY WEIGHT) BY CLASS DETERMINING PHASE				
		ALL				
ALKALI LOVEGRASS	EROB	25				
ALKALI SACATON	SPAI	35				
TOBOSA	HIMU2	10				
BLUE GRAMA	BOGR2	5				
INLAND SALTGRASS	DIST	5				
VINE MESQUITE	PAOB	5				
FOURWING SALTBUSH	ATCA2	10				
SEEPWEED	SUAED	5				
POTENTIAL PRODUCTION (LBS./AC. DRY WT):						
FAVORABLE YEARS		1700				
NORMAL YEARS		1400				
UNFAVORABLE YEARS		1200				

FOOTNOTES

1 THE SUBSTRATUM IS VERY STRATIFIED AND PROPERTIES AND SUITABILITY MAY VARY IN SHORT DISTANCES.

[illegible]

[illegible]: 30 GRAPEVINE SERIES
[illegible] ELS, 5-79
[illegible] CALCIORTHIDS, COARSE-LOAMY, MIXED, THERMIC

GRAPEVINE SERIES CONSISTS OF DEEP, WELL-DRAINED SOILS FORMED IN ALLUVIUM FROM MIXED ROCK SOURCES ON TERRACES. A TYPICAL PROFILE HAS 2 PARTS: (1)A REDDISH-YELLOW LOAMY FINE SAND SURFACE LAYER, 10 INCHES THICK; AND (2)A PINK STRATIFIED FINE SANDY LOAM TO CLAY LOAM TO 60 INCHES. ELEVATIONS ARE ABOUT 2000 FEET. MAST IS 62 TO 64 F. MAP IS 4 TO 6 INCHES. FFS IS ABOUT 240 DAYS. SLOPES ARE 0 TO 4 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-10	LFS	SM	A-2, A-4	0	100	100	75-90	25-40	-	NP
10-18	L	ML	A-4	0	100	100	85-95	60-70	25-35	NP-5
18-60	SH-F SL-CL	SM, SM-SC	A-4	0	100	100	70-80	35-50	15-25	NP-10

DEPTH (IN.)	CLAY (PCT <2MM)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
0-10	5-10	1.50-1.60	6.0-20	0.08-0.11	7.9-9.0	2-8	LOW	.15	5	2	<.5	HIGH	HIGH
10-18	10-15	1.40-1.50	0.6-2.0	0.16-0.18	7.9-9.0	2-8	LOW	.43	5	5	<.5		
18-60	10-18	1.40-1.50	0.6-2.0	0.12-0.15	8.5-9.0	2-8	LOW	.32					

FLOODING FREQUENCY	DURATION	MONTHS	HIGH WATER TABLE DEPTH (FT)	KIND	MONTHS	CEMENTED PAN DEPTH (IN)	HARDNESS	BEDROCK DEPTH (IN)	HARDNESS	SUBSIDENCE INIT. (IN)	TOTAL (IN)	HYD GRP	POTENT'L FROST ACTION
RARE			>6.0			-		>60		-		B	-

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	MODERATE-FLOODS,PERCS SLOWLY
SEWAGE LAGOON AREAS	SEVERE-FLOODS
SANITARY LANDFILL (TRENCH)	MODERATE-FLOODS
SANITARY LANDFILL (AREA)	MODERATE-FLOODS
DAILY COVER FOR LANDFILL	GOOD

CONSTRUCTION MATERIAL

ROADFILL	GOOD
SAND	IMPROBABLE-EXCESS FINES
GRAVEL	IMPROBABLE-EXCESS FINES
TOPSOIL	L: FAIR-EXCESS SALT LFS: FAIR-TOO SANDY,EXCESS SALT

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	SLIGHT
DWELLINGS WITHOUT BASEMENTS	SEVERE-FLOODS
DWELLINGS WITH BASEMENTS	SEVERE-FLOODS
SMALL COMMERCIAL BUILDINGS	SEVERE-FLOODS
LOCAL ROADS AND STREETS	MODERATE-FLOODS
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	MODERATE-EXCESS SALT

WATER MANAGEMENT

POND RESERVOIR AREA	0-3%: MODERATE-SEEPAGE 3-4%: MODERATE-SEEPAGE,SLOPE
EMBANKMENTS DIKES AND LEVEES	SEVERE-PIPING
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	L: EXCESS SALT LFS: FAST INTAKE,SOIL BLOWING,EXCESS SALT
TERRACES AND DIVERSIONS	LFS: FAVORABLE L: ERODES EASILY
GRASSED WATERWAYS	LFS: EXCESS SALT L: EXCESS SALT,ERODES EASILY

REGIONAL INTERPRETATIONS

RECREATIONAL DEVELOPMENT

CAMP AREAS	SEVERE-FLOODS	PLAYGROUNDS	0-2% LFS: MODERATE-EXCESS SALT 2-4% LFS: MODERATE-SLOPE,EXCESS SALT 0-2% L: MODERATE-DUSTY,EXCESS SALT 2-4% L: MODERATE-SLOPE,DUSTY,EXCESS SALT
PICNIC AREAS	LFS: MODERATE-EXCESS SALT L: MODERATE-EXCESS SALT,DUSTY	PATHS AND TRAILS	LFS: SLIGHT L: SEVERE-ERODES EASILY

CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

CLASS-DETERMINING PHASE	CAPABILITY		ALFALFA HAY (TONS)		PASTURE (AUM)											
	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.
LFS	7S	2S		8		12										
0-2% L	7C	1		8		12										
2-4% L	7C	2E		8		12										

WOODLAND SUITABILITY

CLASS-DETERMINING PHASE	ORD SYM	MANAGEMENT PROBLEMS: EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORT'Y.	WINDTH. HAZARD	PLANT COMPET.	POTENTIAL PRODUCTIVITY: COMMON TREES	SITE INDX	TREES TO PLANT
							NONE		

WINDBREAKS

CLASS-DETERMINING PHASE	SPECIES	HT	SPECIES	HT	SPECIES	HT	SPECIES	HT
IRR	RUSSIAN-OLIVE	30	ARIZONA CYPRESS	30	ALLEPO PINE	40	OLEANDER	12

WILDLIFE HABITAT SUITABILITY

CLASS-DETERMINING PHASE	POTENTIAL FOR HABITAT ELEMENTS: GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	POTENTIAL AS HABITAT FOR: OPENLD WILDLF	WOODLD WILDLF	WETLAND WILDLF	RANGELD WILDLF
IRR	GOOD	GOOD	GOOD	-	-	GOOD	POOR		GOOD	-	V. POOR	GOOD
NIRR	V. POOR	V. POOR	POOR	-	-	POOR	POOR	V. POOR	V. POOR	-	V. POOR	POOR

POTENTIAL NATIVE PLANT COMMUNITY (RANGELAND OR FOREST UNDERSTORY VEGETATION)

COMMON PLANT NAME	PLANT SYMBOL (NLSPN)	PERCENTAGE COMPOSITION (DRY WEIGHT) BY CLASS DETERMINING PHASE: ALL				
CREOSOTEBUSH	LADI2	30				
WHITE BURSAGE	FRDU	10				
CATCLAW	ACGR	5				
SHADSCALE	ATCO	10				
BIG GALLETA	HIRI	5				
OTHER SHRUBS	SSSS	10				
OTHER PERENNIAL FORBS	PPFF	5				
OTHER ANNUAL FORBS	AAFF	10				
OTHER ANNUAL GRASSES	AAGG	10				
OTHER PERENNIAL GRASSES	PPGG	5				
POTENTIAL PRODUCTION (LBS./AC. DRY WT): FAVORABLE YEARS		325				
NORMAL YEARS		200				
UNFAVORABLE YEARS		100				

FOOTNOTES

1 EXCESS SULFATE SALTS ARE CORROSIVE TO CONCRETE AND SUBJECT TO SOLUTION PIPING.

2 PERMEABILITY NOT A LIMITING SOIL PROPERTY IN ARID AREAS.

NV0430

SOIL INTERPRETATIONS RECORD

MLRA(S): 30
REV. 05-79
TYPIC CALCIORTHIDS, SANDY, MIXED, THERMIC

KNOB HILL SERIES

KNOB HILL SERIES CONSISTS OF DEEP SOMEWHAT EXCESSIVELY DRAINED SOILS FORM IN MIXED ALLUVIUM ON ALLUVIAL FANS. A TYPICAL PROFILE HAS A LIGHT BROWN LOAMY SAND SURFACE LAYER ABOUT 7 INCHES THICK, A STRATIFIED LIGHT BROWN GRAVELLY AND VERY GRAVELLY LOAMY SAND ABOUT 16 INCHES THICK AND PINKISH GRAY GRAVELLY FINE SANDY LOAM HIGH IN LIME ABOUT 14 INCHES THICK OVER LIGHT BROWN LOAMY FINE SAND. ELEV IS 1400 TO FEET. MAAT IS ABOUT 60F, MAP IS 4 TO 7 INCHES, FFS IS 230 TO 260 DAYS. SLOPES ARE 0 TO 5 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLAS-TICITY INDEX
0-7	LS	SM	A-2	0	85-100	80-95	50-60	15-30	-	NP
0-7	GR-LS	GM, SM	A-1	0-5	55-80	50-75	30-50	10-25	-	NP
7-23	SR-SL-GRV-LS	GM, SM	A-1	0-10	50-75	50-70	30-50	10-25	-	NP
23-37	GR-FSL, GR-LS	GM, SM	A-1, A-2	0-5	50-75	50-70	30-60	10-30	-	NP
37-60	SR-LFS-GRV-LS	GM, SM	A-1, A-2	0-10	50-75	50-70	30-60	10-25	-	NP

DEPTH (IN.)	CLAY (PCT <2MM)	MOIST BULK DENSITY (G/CM3)	PERMEA-BILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND ERODO. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
0-7	3-8		6.0-20	0.06-0.08	7.9-8.4	<2	LOW	.17	5	2	<.5	HIGH	LOW
0-7	3-8		6.0-20	0.05-0.07	7.9-8.4	<2	LOW	.17	5	5	<.5		
7-23	3-10		2.0-6.0	0.06-0.08	7.9-8.4	<2	LOW	.17					
23-37	3-10		2.0-6.0	0.06-0.08	7.9-9.0	<8	LOW	.17					
37-60	3-8		6.0-20	0.05-0.07	>7.8	<4	LOW	.17					

FLOODING FREQUENCY	DURATION	MONTHS	HIGH WATER TABLE DEPTH (FT)	KIND	MONTHS	CEMENTED PAN DEPTH (IN)	HARDNESS	BEDROCK DEPTH (IN)	HARDNESS	SUBSIDENCE INIT. (IN)	TOTAL (IN)	HYD GRP	POTENT'L FROST ACTION
NONE			>6.0			-		>60		-		B	-

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	SEVERE-POOR FILTER
SEWAGE LAGOON AREAS	SEVERE-SEEPAGE
SANITARY LANDFILL (TRENCH)	MODERATE-TOO SANDY
SANITARY LANDFILL (AREA)	SLIGHT
DAILY COVER FOR LANDFILL	POOR-SMALL STONES

CONSTRUCTION MATERIAL

ROADFILL	GOOD
SAND	IMPROBABLE-EXCESS FINES
GRAVEL	IMPROBABLE-EXCESS FINES
TOPSOIL	POOR-SMALL STONES, AREA RECLAIM

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	SEVERE-CUTBANKS CAVE
DWELLINGS WITHOUT BASEMENTS	SLIGHT
DWELLINGS WITH BASEMENTS	SLIGHT
SMALL COMMERCIAL BUILDINGS	0-4%: SLIGHT 4-5%: MODERATE-SLOPE
LOCAL ROADS AND STREETS	SLIGHT
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	LS: MODERATE-DROUGHTY GR: MODERATE-SMALL STONES, DROUGHTY

WATER MANAGEMENT

POND RESERVOIR AREA	SEVERE-SEEPAGE
EMBANKMENTS DIKES AND LEVEES	SEVERE-SEEPAGE
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	GR-LS: DROUGHTY, FAST INTAKE LS: DROUGHTY, FAST INTAKE, SOIL BLOWING
TERRACES AND DIVERSIONS	GR-LS: TOO SANDY LS: TOO SANDY, SOIL BLOWING
GRASSED WATERWAYS	DROUGHTY

REGIONAL INTERPRETATIONS

NV0124

SOIL INTERPRETATIONS RECORD

MLRA(S): 30
HS, 11-75
TYPIC CALCIORTHIDS, LOAMY-SKELETAL, MIXED, THERMIC

NICKEL SERIES

NICKEL SERIES CONSIST OF DEEP, WELL-DRAINED SOILS. THEY FORMED IN ALLUVIUM FROM MIXED ROCK SOURCES ON DISSECTED TERRACES. A TYPICAL PROFILE HAS 2 PARTS: (1) A LIGHT BROWN GRAVELLY SANDY LOAM SURFACE LAYER, 7 INCHES THICK; AND (2) A LIGHT BROWNISH-GRAY VERY GRAVELLY SANDY LOAM TO 60 INCHES. ELEVATIONS ARE 2500 TO 4000 FEET. MAST IS 62 TO 67 F. MAP IS 4 TO 6 INCHES. FFS IS ABOUT 230 DAYS. SLOPES ARE 0 TO 30 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-7	GR-SL	GM	A-1	0-5	55-65	50-60	30-40	15-25	-	NP
0-7	GRV-SL	GP-GM, GM	A-1	0-5	15-35	15-35	10-20	5-15	-	NP
7-19	GRV-SL,GRV-COSL,GRV ?	GP-GM, GM	A-1	0-20	20-40	10-35	5-30	5-15	-	NP
19-60	GRV-SL,GRV-COSL,GRV ?	GP-GM, GM	A-1	0-25	20-45	15-40	10-30	5-15	-	NP

DEPTH (IN.)	CLAY (PCT <2MM)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
0-7	3-8		2.0-6.0	0.07-0.10	7.9-9.0	<2	LOW	.17	5	5	<.5	HIGH	LOW
0-7	3-8		20-6.0	0.04-0.06	7.9-9.0	<2	LOW	.15	5	8	<.5		
7-19	5-10		0.2-0.6	0.04-0.06	7.9-9.0	<4	LOW	.15					
19-60	3-8		2.0-6.0	0.04-0.06	7.9-9.0	<4	LOW	.15					

FLOODING FREQUENCY	DURATION	MONTHS	HIGH WATER TABLE DEPTH (FT)	KIND	MONTHS	CEMENTED PAN DEPTH (IN)	HARDNESS	BEDROCK DEPTH (IN)	HARDNESS	SUBSIDENCE INIT. (IN)	TOTAL (IN)	HYD GRP	POTENT'L FROST ACTION
NONE			>6.0			-		>60		-		B	-

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	SEVERE-SLOPE,PERCS SLOWLY
SEWAGE LAGOON AREAS	SEVERE-SLOPE,SMALL STONES
SANITARY LANDFILL (TRENCH)	15-25%: SEVERE-SMALL STONES 25+%: SEVERE-SLOPE,SMALL STONES
SANITARY LANDFILL (AREA)	SEVERE-SLOPE
DAILY COVER FOR LANDFILL	POOR-SLOPE,SMALL STONES

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	SEVERE-SLOPE,SMALL STONES
DWELLINGS WITHOUT BASEMENTS	SEVERE-SLOPE
DWELLINGS WITH BASEMENTS	SEVERE-SLOPE
SMALL COMMERCIAL BUILDINGS	SEVERE-SLOPE
LOCAL ROADS AND STREETS	SEVERE-SLOPE
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	0-15% GR: SEVERE-DROUGHTY 15+% GR: SEVERE-DROUGHTY,SLOPE 0-15% GRV: SEVERE-SMALL STONES,DROUGHTY 15+% GRV: SEVERE-SMALL STONES,DROUGHTY,SLOPE

CONSTRUCTION MATERIAL

ROADFILL	15-25%: FAIR-SLOPE 25+%: POOR-SLOPE
SAND	PROBABLE
GRAVEL	PROBABLE
TOPSOIL	POOR-SLOPE,SMALL STONES

WATER MANAGEMENT

POND RESERVOIR AREA	SEVERE-SLOPE
EMBANKMENTS DIKES AND LEVEES	SEVERE-SEEPAGE
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	0-3%: DROUGHTY 3+%: DROUGHTY,SLOPE
TERRACES AND DIVERSIONS	SLOPE,SMALL STONES
GRASSED WATERWAYS	0-8%: LARGE STONES,DROUGHTY 8+%: LARGE STONES,SLOPE,DROUGHTY

REGIONAL INTERPRETATIONS

NICKEL SERIES

RECREATIONAL DEVELOPMENT

CAMP AREAS	SEVERE-SLOPE	PLAYGROUNDS	SEVERE-SLOPE, SMALL STONES
PICNIC AREAS	SEVERE-SLOPE	PATHS AND TRAILS	15-25%: MODERATE-SLOPE, SMALL STONES 25+%: SEVERE-SLOPE

CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

CLASS-DETERMINING PHASE	CAPABILITY															
	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.
ALL	7E	-														

WOODLAND SUITABILITY

CLASS-DETERMINING PHASE	ORD SYM	MANAGEMENT PROBLEMS					POTENTIAL PRODUCTIVITY		TREES TO PLANT
		EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORT'Y.	WINDTH. HAZARD	PLANT COMPET.	COMMON TREES	SITE INDX	
							NONE		

WINDBREAKS

CLASS-DETERMINING PHASE	SPECIES	HT	SPECIES	HT	SPECIES	HT	SPECIES	HT
	NONE							

WILDLIFE HABITAT SUITABILITY

CLASS-DETERMINING PHASE	POTENTIAL FOR HABITAT ELEMENTS								POTENTIAL AS HABITAT FOR:			
	GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	OPENLD WILDLF	WOODLD WILDLF	WETLAND WILDLF	RANGELD WILDLF
ALL	V. POOR	V. POOR	POOR	-	-	POOR	V. POOR	V. POOR	V. POOR	-	V. POOR	POOR

POTENTIAL NATIVE PLANT COMMUNITY (RANGELAND OR FOREST UNDERSTORY VEGETATION)

COMMON PLANT NAME	PLANT SYMBOL (NLSPN)	PERCENTAGE COMPOSITION (DRY WEIGHT) BY CLASS DETERMINING PHASE				
		WARM	COOL			
CREOSOTEBUSH	LADI2	25	15			
WHITE BURSAGE	FRDU	10	5			
MOHAVE YUCCA	YUMO	5	10			
NEVADA EPHEDRA	EPNE	5	5			
BIG GALLETA	HIRI	5	5			
INDIAN RICEGRASS	ORHY	5	5			
FILAREE	ERODI	5	5			
FLUFFGRASS	TRPU2	5	5			
BLACKBRUSH	CORA	-	15			
OTHER ANNUAL GRASSES	AAGG	10	10			
OTHER ANNUAL FORBS	AAFF	10	10			
OTHER PERENNIAL GRASSES	PPGG	5	5			
OTHER PERENNIAL FORBS	PPFF	5	5			
UNKNOWNS	UUUU	5	-			
POTENTIAL PRODUCTION (LBS./AC. DRY WT):						
FAVORABLE YEARS		285	350			
NORMAL YEARS		165	200			
UNFAVORABLE YEARS		85	100			

FOOTNOTES

1 EXCESSIVE PERMEABILITY RATE NOT A LIMITATION IN ARID CLIMATE.

SOIL INTERPRETATIONS RECORD

NV0150

ST. THOMAS SERIES

MLRA(S): 30
RS. 11-75
LITHIC TORRIORTHENTS. LOAMY-SKELETAL. CARBONATIC. THERMIC

ST. THOMAS SERIES CONSISTS OF SHALLOW. WELL-DRAINED SOILS FORMED IN RESIDUUM FROM LIMESTONE ON FOOTHILLS AND MOUNTAIN SLOPES. A TYPICAL PROFILE HAS 2 PARTS: (1)A VERY PALE BROWN COBBLY LOAM SURFACE LAYER. 2 INCHES THICK; AND (2)A VERY PALE BROWN COBBLY LOAM LAYER. 10 INCHES THICK. OVERLYING BEDROCK. ELEVATIONS ARE 1600 TO 2100 FEET. MAST IS 66 TO 70 F. MAP IS 4 TO 6 INCHES. FFS IS ABOUT 240 DAYS. SLOPES RANGE FROM 15 TO 75 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-2	CB-L	ML	A-4	20-40	75-85	75-85	65-80	50-65	25-30	NP-5
0-2	GRV-FSL	GM	A-1	5-30	25-55	25-50	20-45	10-25	25-30	NP-5
2-12	CBV-L. GRV-L. GRV-FSL	GM	A-1. A-2	15-50	25-45	25-40	20-35	10-30	25-30	NP-5
12	UWB									

DEPTH (IN.)	CLAY (PCT <2MM)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
0-2	8-13		2.0-6.0	0.07-0.10	7.9-9.0	<2	LOW	.24	1	5	<.5	HIGH	LOW
0-2	4-9		2.0-6.0	0.04-0.06	7.9-9.0	<2	LOW	.17	1	8			
2-12	8-15		2.0-6.0	0.04-0.07	7.9-9.0	<4	LOW	.17					
12													

FLOODING FREQUENCY	DURATION	MONTHS	HIGH WATER TABLE DEPTH (FT)	KIND	MONTHS	CEMENTED PAN DEPTH (IN)	HARDNESS	BEDROCK DEPTH (IN)	HARDNESS	SUBSIDENCE INIT. (IN)	TOTAL (IN)	HYD GRP	POTENT'L FROST ACTION
NONE			>6.0			-		4-20	HARD	-		D	LOW

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	SEVERE-SLOPE.DEPTH TO ROCK
SEWAGE LAGOON AREAS	SEVERE-DEPTH TO ROCK.SLOPE.SMALL STONES
SANITARY LANDFILL (TRENCH)	15-25%: SEVERE-DEPTH TO ROCK.SMALL STONES 25+%: SEVERE-DEPTH TO ROCK.SMALL STONES. SLOPE
SANITARY LANDFILL (AREA)	SEVERE-SLOPE
DAILY COVER FOR LANDFILL	POOR-THIN LAYER.SMALL STONES.SLOPE

CONSTRUCTION MATERIAL

ROADFILL	15-25%: POOR-THIN LAYER 25+%: POOR-THIN LAYER.SLOPE
SAND	IMPROBABLE-EXCESS FINES
GRAVEL	IMPROBABLE-EXCESS FINES
TOPSOIL	POOR-SMALL STONES.LARGE STONES.SLOPE

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	SEVERE-SLOPE.DEPTH TO ROCK.SMALL STONES
DWELLINGS WITHOUT BASEMENTS	SEVERE-SLOPE.DEPTH TO ROCK
DWELLINGS WITH BASEMENTS	SEVERE-SLOPE.DEPTH TO ROCK
SMALL COMMERCIAL BUILDINGS	SEVERE-SLOPE.DEPTH TO ROCK
LOCAL ROADS AND STREETS	SEVERE-SLOPE.DEPTH TO ROCK
LAWNS. LANDSCAPING AND GOLF FAIRWAYS	GRV: SEVERE-DROUGHTY.SLOPE CB: SEVERE-LARGE STONES.DROUGHTY.SLOPE

WATER MANAGEMENT

POND RESERVOIR AREA	SEVERE-DEPTH TO ROCK.SLOPE
EMBANKMENTS DIKES AND LEVEES	SEVERE-SEEPAGE.LARGE STONES
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	LARGE STONES.DROUGHTY.DEPTH TO ROCK
TERRACES AND DIVERSIONS	DEPTH TO ROCK.SLOPE
GRASSED WATERWAYS	LARGE STONES.SLOPE.DROUGHTY

REGIONAL INTERPRETATIONS

RECREATIONAL DEVELOPMENT

CAMP AREAS	SEVERE-SLOPE,SMALL STONES,DEPTH TO ROCK	PLAYGROUNDS	SEVERE-SLOPE,DEPTH TO ROCK,SMALL STONES
PICNIC AREAS	SEVERE-SLOPE,SMALL STONES	PATHS AND TRAILS	15-25%: SEVERE-SMALL STONES 25+%: SEVERE-SMALL STONES,SLOPE

CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

CLASS-DETERMINING PHASE	CAPABILITY															
	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.
ALL	7E															

WOODLAND SUITABILITY

CLASS-DETERMINING PHASE	ORD SYM	MANAGEMENT PROBLEMS: EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORT'Y.	WINDTH. HAZARD	PLANT COMPET.	POTENTIAL PRODUCTIVITY: COMMON TREES	SITE INDX	TREES TO PLANT
							NONE		

WINDBREAKS

CLASS-DETERMINING PHASE	SPECIES	HT	SPECIES	HT	SPECIES	HT	SPECIES	HT
	NONE							

WILDLIFE HABITAT SUITABILITY

CLASS-DETERMINING PHASE	POTENTIAL FOR HABITAT ELEMENTS: GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	POTENTIAL AS HABITAT FOR: OPENLD WILDLF	WOODLD WILDLF	WETLAND WILDLF	RANGELD WILDLF
NIRR	V. POOR	V. POOR	V. POOR	-	-	V. POOR	V. POOR	V. POOR	V. POOR	-	V. POOR	V. POOR

POTENTIAL NATIVE PLANT COMMUNITY (RANGELAND OR FOREST UNDERSTORY VEGETATION)

COMMON PLANT NAME	PLANT SYMBOL (NLSPN)	PERCENTAGE COMPOSITION (DRY WEIGHT) BY CLASS DETERMINING PHASE: WARM	COOL			
CREOSOTEBUSH	LAO12	20	15			
WHITE BURSAGE	FROU	8	10			
BIG GALLETA	HIRI	7	5			
RANGE RATANY	KRPAG	5	5			
WHITE BRITTLEBUSH	ENFA	5	-			
INDIAN RICEGRASS	ORHY	5	5			
MOJAVE YUCCA	YUMO	-	5			
FLUFFGRASS	TRPU2	-	10			
NEVADA EPHEDRA	EPNE	-	5			
OTHER SHRUBS	SSSS	20	10			
OTHER ANNUAL GRASSES	AAGG	7	10			
OTHER PERENNIAL GRASSES	PPGG	5	5			
OTHER ANNUAL FORBS	AAFF	10	10			
OTHER PERENNIAL FORBS	PPFF	8	5			
POTENTIAL PRODUCTION (LBS./AC. DRY WT):						
FAVORABLE YEARS		175	225			
NORMAL YEARS		125	150			
UNFAVORABLE YEARS		90	100			

FOOTNOTES

1 EXCESSIVE PERMEABILITY RATE NOT A LIMITATION IN ARID CLIMATE.

SOIL INTERPRETATIONS RECORD

NV0161

VIRGIN PEAK SERIES

MLRA(S): 30
REV. RS. 7-77
LITHIC HAPLUSTOLLS, LOAMY-SKELETAL, MIXED, MESIC

VIRGIN PEAK SERIES CONSISTS OF SHALLOW, WELL-DRAINED SOILS FORMED IN RESIDUUM FROM MIXED ROCK SOURCES ON MOUNTAIN SLOPES. A TYPICAL PROFILE HAS A BROWN VERY GRAVELLY LOAM SURFACE LAYER, 6 INCHES THICK, OVER WEATHERED BEDROCK GRADING TO UNWEATHERED AT 14 INCHES. ELEVATIONS ARE 4800 TO 8000 FEET. MAST IS 53 TO 58 F. MAP IS 12 TO 20 INCHES. FFS IS ABOUT 120 TO 160 DAYS. SLOPES ARE 30 TO 75 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-6	GRV-L	GM, GM-GC	A-1, A-2	0-15	35-45	25-35	20-30	15-25	20-30	NP-10
0-6	CBV-SL	GP-GM, GM, SP-SM, SM	A-1, A-2	30-60	35-75	25-70	15-50	5-30	20-25	NP-5
6-14	WB									
14	UWB									

DEPTH (IN.)	CLAY (PCT <2MM)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
0-6	8-14		2.0-6.0	0.06-0.08	6.6-7.3	-	LOW	.20	1	8	1-3	MODERATE	LOW
0-6	4-10		2.0-6.0	0.04-0.06	6.6-7.3	-	LOW	.17	1	8	1-3		
6-14													
14													

FLOODING FREQUENCY	DURATION	MONTHS	HIGH WATER TABLE DEPTH (FT)	KIND	MONTHS	CEMENTED PAN DEPTH (IN)	HARDNESS	BEDROCK DEPTH (IN)	HARDNESS	SUBSIDENCE INIT. (IN)	TOTAL (IN)	HYD GRP	POTENT'L FROST ACTION
NONE			>6.0			-		8-20	HARD	-		D	-

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	GRV: SEVERE-DEPTH TO ROCK, SLOPE CBV: SEVERE-DEPTH TO ROCK, SLOPE, LARGE STONES
SEWAGE LAGOON AREAS	GRV: SEVERE-DEPTH TO ROCK, SLOPE CBV: SEVERE-DEPTH TO ROCK, SLOPE, LARGE STONES
SANITARY LANDFILL (TRENCH)	GRV: SEVERE-DEPTH TO ROCK, SLOPE CBV: SEVERE-DEPTH TO ROCK, SLOPE, LARGE STONES
SANITARY LANDFILL (AREA)	SEVERE-DEPTH TO ROCK, SLOPE
DAILY COVER FOR LANDFILL	POOR-AREA RECLAIM, SLOPE

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	GRV: SEVERE-DEPTH TO ROCK, SLOPE CBV: SEVERE-DEPTH TO ROCK, LARGE STONES, SLOPE
DWELLINGS WITHOUT BASEMENTS	GRV: SEVERE-SLOPE, DEPTH TO ROCK CBV: SEVERE-SLOPE, DEPTH TO ROCK, LARGE STONES
DWELLINGS WITH BASEMENTS	GRV: SEVERE-DEPTH TO ROCK, SLOPE CBV: SEVERE-DEPTH TO ROCK, SLOPE, LARGE STONES
SMALL COMMERCIAL BUILDINGS	GRV: SEVERE-SLOPE, DEPTH TO ROCK CBV: SEVERE-SLOPE, DEPTH TO ROCK, LARGE STONES
LOCAL ROADS AND STREETS	GRV: SEVERE-DEPTH TO ROCK, SLOPE CBV: SEVERE-DEPTH TO ROCK, SLOPE, LARGE STONES
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	GRV: SEVERE-SMALL STONES, SLOPE CBV: SEVERE-SMALL STONES, LARGE STONES, SLOPE

CONSTRUCTION MATERIAL

ROADFILL	GRV: POOR-AREA RECLAIM, SLOPE CBV: POOR-AREA RECLAIM, LARGE STONES, SLOPE
SAND	IMPROBABLE-EXCESS FINES
GRAVEL	IMPROBABLE-EXCESS FINES
TOPSOIL	POOR-AREA RECLAIM, SMALL STONES, SLOPE

WATER MANAGEMENT

POND RESERVOIR AREA	SEVERE-DEPTH TO ROCK, SLOPE
EMBANKMENTS DIKES AND LEVEES	GRV: SLIGHT CBV: SEVERE-LARGE STONES
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	GRV: DROUGHTY, DEPTH TO ROCK CBV: LARGE STONES, DROUGHTY, DEPTH TO ROCK
TERRACES AND DIVERSIONS	GRV: SLOPE, DEPTH TO ROCK CBV: SLOPE, LARGE STONES, DEPTH TO ROCK
GRASSED WATERWAYS	GRV: SLOPE, DROUGHTY CBV: LARGE STONES, SLOPE, DROUGHTY

REGIONAL INTERPRETATIONS

RECREATIONAL DEVELOPMENT

CAMP AREAS	GRV: SEVERE-SLOPE,SMALL STONES CBV: SEVERE-SLOPE,LARGE STONES,SMALL STONES	PLAYGROUNDS	GRV: SEVERE-SLOPE,SMALL STONES CBV: SEVERE-LARGE STONES,SLOPE,SMALL STONES
PICNIC AREAS	GRV: SEVERE-SLOPE,SMALL STONES CBV: SEVERE-SLOPE,LARGE STONES,SMALL STONES	PATHS AND TRAILS	GRV: SEVERE-SLOPE,SMALL STONES CBV: SEVERE-LARGE STONES,SLOPE,SMALL STONES

CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

CLASS-DETERMINING PHASE	CAPABILITY															
	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.	NIRR	IRR.
ALL	7S															

WOODLAND SUITABILITY

CLASS-DETERMINING PHASE	ORD SYM	MANAGEMENT PROBLEMS					POTENTIAL PRODUCTIVITY		TREES TO PLANT
		EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORT'Y.	WINDTH. HAZARD	PLANT COMPET.	COMMON TREES	SITE INDX	
							NONE		

WINDBREAKS

CLASS-DETERMINING PHASE	SPECIES	HT	SPECIES	HT	SPECIES	HT	SPECIES	HT
	NONE							

WILDLIFE HABITAT SUITABILITY

CLASS-DETERMINING PHASE	POTENTIAL FOR HABITAT ELEMENTS								POTENTIAL AS HABITAT FOR:			
	GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	OPENLD WILDLF	WOODLD WILDLF	WETLAND WILDLF	RANGELD WILDLF
ALL	V. POOR	V. POOR	FAIR	-	-	FAIR	V. POOR	V. POOR	V. POOR	-	V. POOR	FAIR

POTENTIAL NATIVE PLANT COMMUNITY (RANGELAND OR FOREST UNDERSTORY VEGETATION)

COMMON PLANT NAME	PLANT SYMBOL (NLSPN)	PERCENTAGE COMPOSITION (DRY WEIGHT) BY CLASS DETERMINING PHASE				
		WARM	COOL			
BIG SAGEBRUSH	ARTR2	20	20			
STANSBURY CLIFFROSE	COMES	8	10			
NEEDLEANDTHREAD	STCO4	5	8			
TURBINELLA OAK	QUTU2	8	-			
BLUE GRAMA	BOGR2	5	5			
PINYON	PIED		5			
UTAH JUNIPER	JUOS		8			
NEVADA EPHEDRA	EPNE		5			
OTHER PERENNIAL GRASSES	PPGG	10	10			
OTHER SHRUBS	SSSS	20	10			
OTHER PERENNIAL FORBS	PPFF	10	5			
OTHER ANNUAL GRASSES	AAGG	7	7			
OTHER ANNUAL FORBS	AAFF	7	7			
POTENTIAL PRODUCTION (LBS./AC. DRY WT):						
FAVORABLE YEARS		915	1100			
NORMAL YEARS		600	750			
UNFAVORABLE YEARS		400	500			

FOOTNOTES

TABLE C.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES

[Only the soils that support rangeland vegetation suitable for grazing are listed]

Soil name and map symbol	Range site name	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
100 Arizo	Dry Sedimentary Wash	Favorable	125	Creosotebush	20
		Normal	100	White bursage	8
		Unfavorable	50	Galleta	7
				Desertwillow	5
				Acacia	5
				Mesquite	5
				Indian ricegrass	5
				White burrobrush	5
				Fremont dalea	5
101 Arizo	Sedimentary Washes And Fans	Favorable	400	Creosotebush	10
		Normal	200	Red brome	10
		Unfavorable	100	White bursage	5
				Galleta	5
				Indian ricegrass	5
				Filaree	5
				Joshua-tree	5
				Pricklypear	5
				Desert needlegrass	5
				Desert alysum	5
102 Arizo	Sedimentary Saline Fans And Floodplains.	Favorable	200	Shadscale	40
		Normal	100	Fourwing saltbush	30
		Unfavorable	50	Desertholly	5
103 Arizo	Sedimentary Washes And Fans	Favorable	300	Desert needlegrass	15
		Normal	200	Fremont dalea	15
		Unfavorable	125	Creosotebush	10
				Indian ricegrass	10
				Yucca	10
				White bursage	5
				White burrobrush	5
				Blackbrush	5
105*:					
Bitter	Arid Limy Collvial-Alluvial	Favorable	300	Creosotebush	20
		Normal	200	White bursage	10
		Unfavorable	100	Blackbrush	10
				Big galleta	8
				Indian ricegrass	5
				Cactus	5
				Nevada ephedra	5
Arizo	Sedimentary Washes And Fans	Favorable	400	Creosotebush	10
		Normal	200	Red brome	10
		Unfavorable	100	White bursage	5
				Galleta	5
				Indian ricegrass	5
				Filaree	5
				Joshua-tree	5
				Pricklypear	5
				Desert needlegrass	5
				Desert alysum	5
Nickel	Arid Limy Colluvial-Alluvial	Favorable	350	Creosotebush	15
		Normal	200	Blackbrush	15
		Unfavorable	100	Mohave yucca	10
				White bursage	5
				Nevada ephedra	5
				Big galleta	5
				Indian ricegrass	5
				Filaree	5
				Fluffgrass	5

See footnote at end of table.

TABLE C.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
106*: Bitter	Arid Limy Colluvial-Alluvial	Favorable	300	Creosotebush	20
		Normal	200	White bursage	10
		Unfavorable	100	Blackbrush	10
				Big galleta	8
				Indian ricegrass	5
				Cactus	5
				Nevada ephedra	5
Cave	Arid Limy Colluvial-Alluvial	Favorable	260	Bush muhly	30
		Normal	150	Creosotebush	30
		Unfavorable	70	White bursage	15
				Fluffgrass	5
				Mohave yucca	5
				Nevada ephedra	5
Nickel	Arid Limy Colluvial-Alluvial	Favorable	350	Creosotebush	15
		Normal	200	Blackbrush	15
		Unfavorable	100	Mohave yucca	10
				White bursage	5
				Nevada ephedra	5
				Big galleta	5
				Indian ricegrass	5
				Filaree	5
				Fluffgrass	5
107*: Blackmount	Sedimentary Washes And Fans	Favorable	230	Creosotebush	20
		Normal	170	White bursage	10
		Unfavorable	100	Big galleta	8
				Indian ricegrass	5
				Cactus	5
Arizo	Dry Sedimentary Washes And Fans.	Favorable	125	Creosotebush	20
		Normal	100	White bursage	8
		Unfavorable	50	Galleta	7
				Desertwillow	5
				Acacia	5
				Mesquite	5
				Indian ricegrass	5
				White burrobrush	5
				Fremont dalea	5
108*: Blackmount	Sedimentary Washes And Fans	Favorable	230	Creosotebush	20
		Normal	170	White bursage	10
		Unfavorable	100	Big galleta	8
				Indian ricegrass	5
				Cactus	5
Nickel	Sedimentary Washes And Fans	Favorable	285	Creosotebush	25
		Normal	165	White bursage	10
		Unfavorable	85	Mohave yucca	5
				Nevada ephedra	5
				Big galleta	5
				Indian ricegrass	5
				Filaree	5
				Fluffgrass	5
109*: Bluepoint	Arid Sandy, Limy Uplands	Favorable	375	Creosotebush	15
		Normal	225	White bursage	10
		Unfavorable	100	Big galleta	10
				Claretcup cactus	7
				Yucca	5
				Indian ricegrass	5
				Desert needlegrass	5

See footnote at end of table.

TABLE C.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
109*:					
Arizo	Sedimentary Washes And Fans	Favorable	400	Creosotebush	10
		Normal	200	Red brome	10
		Unfavorable	100	White bursage	5
				Galleta	5
				Indian ricegrass	5
				Filaree	5
				Joshua-tree	5
				Pricklypear	5
				Desert needlegrass	5
				Desert alysum	5
110*:					
Bluepoint	Arid Sandy Limy Uplands	Favorable	375	Creosotebush	15
		Normal	225	White bursage	10
		Unfavorable	100	Big galleta	10
				Claretcup cactus	7
				Yucca	5
				Indian ricegrass	5
				Desert needlegrass	5
Arizo	Sedimentary Washes And Fans	Favorable	400	Creosotebush	10
		Normal	200	Red brome	10
		Unfavorable	100	White bursage	5
				Galleta	5
				Indian ricegrass	5
				Filaree	5
				Joshua-tree	5
				Pricklypear	5
				Desert needlegrass	5
				Desert alysum	5
Cajon	Arid Sandy Limy Uplands	Favorable	---		
		Normal	---		
		Unfavorable	---		
111 Gila	Sedimentary Salt Flats	Favorable	300	Fourwing saltbush	30
		Normal	225	Mesquite	30
		Unfavorable	100	Seepweed	10
112*:					
Gila	Sedimentary Saline Meadows	Favorable	1,300	Alkali sacaton	20
		Normal	650	Inland saltgrass	15
		Unfavorable	400	Big saltbush	10
				Rush	10
				Fourwing saltbush	7
				Giantreed	5
				Mesquite	5
Playa.					
113*:					
Gothard Variant	Sedimentary Salt Flats	Favorable	275	Fourwing saltbush	35
		Normal	150	Inland saltgrass	15
		Unfavorable	50	Mesquite	10
				Shortspine horsebrush	10
				Alkali sacaton	5
				Giant sacaton	5
				Mojave seablite	5
				Allscale saltbush	5
Badland.					

See footnote at end of table.

TABLE C.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
114*: Knob Hill	Sedimentary Saline Fans And Floodplains.	Favorable	250	Creosotebush	30
		Normal	150	White bursage	10
		Unfavorable	50	Shadscale	10
				Fourwing saltbush	10
				Catclaw	5
				Big galleta	5
Blackmount	Sedimentary Washes And Fans	Favorable	230	Creosotebush	20
		Normal	170	White bursage	10
		Unfavorable	100	Big galleta	8
				Indian ricegrass	5
				Cactus	5
115, 116 Nickel	Arid Limy Colluvial-Alluvial	Favorable	350	Creosotebush	15
		Normal	200	Blackbrush	15
		Unfavorable	100	Mohave yucca	10
				White bursage	5
				Nevada ephedra	5
				Big galleta	5
				Indian ricegrass	5
				Filaree	5
				Fluffgrass	5
117, 118 Nickel	Arid Limy Colluvial-Alluvial	Favorable	300		
		Normal	200		
		Unfavorable	100		
119*: Nickel	Arid Limy Colluvial-Alluvial	Favorable	350	Creosotebush	15
		Normal	200	Blackbrush	15
		Unfavorable	100	Mohave yucca	10
				White bursage	5
				Nevada ephedra	5
				Big galleta	5
				Indian ricegrass	5
				Filaree	5
				Fluffgrass	5
Arizo	Sedimentary Washes And Fans	Favorable	400	Creosotebush	10
		Normal	200	Red brome	10
		Unfavorable	100	White bursage	5
				Galleta	5
				Indian ricegrass	5
				Filaree	5
				Joshua-tree	5
				Pricklypear	5
				Desert needlegrass	5
				Desert alysum	5
120*: Nickel	Sedimentary Washes And Fans	Favorable	285	Creosotebush	25
		Normal	165	White bursage	10
		Unfavorable	85	Mohave yucca	5
				Nevada ephedra	5
				Big galleta	5
				Indian ricegrass	5
				Filaree	5
				Fluffgrass	5
Bitter	Sedimentary Washes And Fans	Favorable	230	Creosotebush	30
		Normal	170	White bursage	15
		Unfavorable	100	Big galleta	5
				Indian ricegrass	5
				Cactus	5
				Nevada ephedra	5

See footnote at end of table.

TABLE C.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
121*:					
Eictel	Sedimentary Washes And Fans	Favorable	285	Creosotebush	25
		Normal	165	White bursage	10
		Unfavorable	85	Mohave yucca	5
				Nevada ephedra	5
				Big galleta	5
				Indian ricegrass	5
				Filaree	5
				Fluffgrass	5
Grapevine	Sedimentary Washes And Fans	Favorable	300	Creosotebush	30
		Normal	200	White bursage	10
		Unfavorable	100	Mohave yucca	10
				Nevada ephedra	5
				Big galleta	5
				Indian ricegrass	5
122*:					
Rock outcrop.					
Tecopa	Arid Limy Hills	Favorable	150		
		Normal	100		
		Unfavorable	50		
St. Thomas	Arid Limy Hills	Favorable	225	Creosotebush	15
		Normal	150	White bursage	10
		Unfavorable	100	Fluffgrass	10
				Big galleta	5
				Range ratany	5
				Indian ricegrass	5
				Mohave yucca	5
				Nevada ephedra	5
123*:					
Rock outcrop.					
St. Thomas	Arid Limy Hills	Favorable	225	Creosotebush	15
		Normal	150	White bursage	10
		Unfavorable	100	Fluffgrass	10
				Big galleta	5
				Range ratany	5
				Indian ricegrass	5
				Mohave yucca	5
				Nevada ephedra	5
124*:					
Rock outcrop.					
Virgin Peak	Pinyon-Juniper Highland	Favorable	1,100	Big sagebrush	20
		Normal	750	Stansbury cliffrose	10
		Unfavorable	500	Needleandthread	8
				Utah juniper	8
				Blue grama	5
				Pinyon	5
				Nevada ephedra	5
Typic haplustolls	Pinyon-Juniper Highland	Favorable	---		
		Normal	---		
		Unfavorable	---		
125*:					
Tecopa	Arid Limy Hills	Favorable	150		
		Normal	100		
		Unfavorable	50		
Rock outcrop.					

See footnote at end of table.

TABLE C.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
126*:					
Theriot	Semiarid Highland Slopes	Favorable	250	Fluffgrass	30
		Normal	200	Mohave yucca	10
		Unfavorable	175	Nevada ephedra	10
				Stansbury cliffrose	5
				Pinyon	5
				Big galleta	5
				Indian ricegrass	5
Rock outcrop.					

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE F.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangeland wildlife
100, 101. Arizo									
102, 103 Arizo	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
104*. Badland									
105*: Bitter	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Arizo.									
Nickel	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
106*: Bitter	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Cave	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Nickel	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
107*: Blackmount	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Arizo.									
108*: Blackmount	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Nickel	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
109*: Bluepoint	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Arizo.									
110*: Bluepoint	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Arizo.									
Cajon	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
111 Gila	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
112*: Gila	Very poor	Very poor	Very poor	Very poor	Poor	Fair	Very poor	Poor	Very poor.
Playa.									
113*: Gothard Variant	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.

See footnote at end of table.

TABLE F.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangeland wildlife
113*: Badland.									
114*: Knob Hill	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Blackmount	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
115, 116 Nickel	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
117, 118 Nickel	Very poor	Very poor	Very poor	Poor	Very poor	Very poor	Very poor	Very poor	Very poor.
119*: Nickel	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Arizo.									
120*: Nickel	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Bitter	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
121*: Nickel	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Grapevine.									
122*: Rock outcrop.									
Tecopa	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
St. Thomas.									
123*: Rock outcrop.									
St. Thomas.									
124*: Rock outcrop.									
Virgin Peak	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Typic haplustolls.									
125*: Tecopa	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Rock outcrop.									
126*: Theriot	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Rock outcrop.									

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
100 Arizo	Severe: floods.	Moderate: small stones.	Severe: small stones.	Slight.
101 Arizo	Severe: floods, small stones.	Severe: small stones.	Severe: small stones.	Slight.
102 Arizo	Severe: floods, small stones, excess salt.	Severe: small stones, excess salt.	Severe: small stones, excess salt.	Severe: small stones.
103 Arizo	Severe: floods.	Moderate: slope, small stones.	Severe: large stones, slope, small stones.	Severe: large stones.
104*. Badland				
105*:				
Bitter	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.
Arizo	Severe: floods, small stones.	Severe: small stones.	Severe: small stones.	Slight.
Nickel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	
106*:				
Bitter	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.
Cave	Severe: cemented pan.	Severe: cemented pan.	Severe: small stones, cemented pan.	Slight.
Nickel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	
107*:				
Blackmount	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.
Arizo	Severe: floods, small stones.	Severe: small stones.	Severe: small stones.	Slight.
108*:				
Blackmount	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.
Nickel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	
109*:				
Bluepoint	Severe: floods.	Slight	Moderate: slope.	Slight.

See footnote at end of table.

TABLE 6.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
109*: Arizo	Severe: floods.	Moderate: small stones.	Severe: small stones.	Slight.
110*: Bluepoint	Severe: floods.	Slight	Slight	Slight.
Arizo	Severe: floods.	Moderate: small stones.	Severe: small stones.	Slight.
Cajon		Slight	Moderate: small stones.	Slight.
111 Gila	Severe: floods.	Moderate: floods, dusty.	Moderate: floods, dusty.	Moderate: dusty.
112*: Gila	Severe: floods, excess salt.	Severe: excess salt.	Severe: excess salt.	Severe: erodes easily.
Playa.				
113*: Gothard Variant	Severe: floods, percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.
Badland.				
114*: Knob Hill	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight.
Blackmount	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.
115 Nickel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	
116 Nickel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
117 Nickel	Severe: small stones.	Severe: small stones.	Severe: large stones, slope, small stones.	Moderate: large stones.
118 Nickel	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: slope.
119*: Nickel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	
Arizo	Severe: floods, small stones.	Severe: small stones.	Severe: small stones.	Slight.

See footnote at end of table.

TABLE G.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
120*:				
Nickel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Bitter	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
121*:				
Nickel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	
Grapevine	Severe: floods.	Moderate: small stones.	Severe: small stones.	Slight.
122*:				
Rock outcrop.				
Tecopa	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.
St. Thomas	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: slope, depth to rock, small stones.	Severe: small stones, slope.
123*:				
Rock outcrop.				
St. Thomas	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: slope, depth to rock, small stones.	Severe: small stones, slope.
124*:				
Rock outcrop.				
Virgin Peak	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: large stones, slope, small stones.
Typic haplustolls.				
125*:				
Tecopa	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.
Rock outcrop.				
126*:				
Theriot	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Moderate: large stones.
Rock outcrop.				

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE H.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
100-------------- Arizo	0-6	Gravelly loamy sand.	SP-SM, SM	A-1	0-5	55-80	50-75	25-50	5-20	---	NP
	6-60	Stratified cobbly coarse sand to very gravelly loamy sand.	GP-GM, GP	A-1	0-35	35-55	20-50	10-30	0-10	---	NP
101-------------- Arizo	0-5	Very gravelly loamy sand.	GP-GM, GM	A-1	0-5	45-55	35-45	15-30	5-15	---	NP
	5-60	Stratified cobbly coarse sand to very gravelly loamy sand.	GP-GM, GP	A-1	0-35	35-55	20-50	10-30	0-10	---	NP
102-------------- Arizo	0-5	Very gravelly loamy sand.	GP-GM, GM	A-1	0-20	25-55	25-50	15-30	5-15	---	NP
	5-6	Stratified very gravelly sand to very gravelly loamy sand.	GP, GP-GM	A-1	0-20	25-55	25-50	15-30	0-10	---	NP
103-------------- Arizo	0-8	Extremely stony loamy sand.	SM	A-1, A-2	65-95	60-90	60-90	35-55	10-20	---	NP
	8-60	Stratified stony coarse sand to very gravelly loamy sand.	GP-GM, GP	A-1	15-50	35-55	20-50	10-30	0-10	---	NP
104*. Badland											
105*:											
Bitter-----------	0-3	Very gravelly sandy loam.	GP-GM, GM	A-1	0-10	25-45	25-40	15-30	5-15	---	NP
	3-17	Very gravelly sandy loam, very gravelly sandy clay loam, very gravelly loam.	GM-GC, GC	A-2	0-10	25-45	25-40	20-35	10-30	20-30	5-15
	17-60	Very gravelly loamy sand, very gravelly sand, very cobbly sand.	GP, GP-GM, SM, SP-SM	A-1	10-50	30-75	30-70	15-45	0-20	---	NP
Arizo------------	0-6	Very gravelly loamy sand.	GP-GM, GM	A-1	0-5	45-55	35-45	15-30	5-15	---	NP
	6-60	Stratified cobbly coarse sand to very gravelly loamy sand.	GP-GM, GP	A-1	0-35	35-55	20-50	10-30	0-10	---	NP
Nickel-----------	0-22	Very gravelly sandy loam.	GP-GM, GM	A-1	0-5	15-35	15-35	10-20	5-15	---	NP
	22-40	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-20	20-40	10-35	5-30	5-15	---	NP
	40-60	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-25	20-45	15-40	10-30	5-15	---	NP

See footnote at end of table.

TABLE 8.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
[illegible]	0-3	Very gravelly sandy loam.	GP-GM, GM	A-1	0-10	25-45	25-40	15-30	5-15	---	NP
	3-17	Very gravelly sandy loam, very gravelly sandy clay loam, very gravelly loam.	GM-GC, GC	A-2	0-10	25-45	25-40	20-35	10-30	20-30	5-15
	17-60	Very gravelly loamy sand, very gravelly sand, very cobbly sand.	GP, GP-GM, SM, SP-SM	A-1	10-50	30-75	30-70	15-45	0-20	---	NP
[illegible]	0-10	Gravelly sandy loam.	SM	A-2, A-4	0-5	70-90	60-75	40-65	25-40	20-25	NP-5
	10	Indurated--------	---	---	---	---	---	---	---	---	---
[illegible]	0-9	Very gravelly sandy loam.	GP-GM, GM	A-1	0-5	15-35	15-35	10-20	5-15	---	NP
	9-36	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-20	20-40	10-35	5-30	5-15	---	NP
	36-60	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-25	20-45	15-40	10-30	5-15	---	NP
[illegible]	0-1	Very gravelly sandy loam.	GM	A-1	0-10	25-55	25-50	15-40	10-25	---	NP
	1-10	Very gravelly sandy loam.	GM-GC	A-2	0-5	25-55	25-50	15-35	10-25	20-25	5-10
	10-42	Stratified very gravelly loamy sand to very gravelly sand.	GP, GP-GC	A-1	0-5	25-55	25-50	15-30	0-10	---	NP
	42-60	Very cobbly sand, very cobbly coarse sand.	GP	A-1	0-5	25-55	25-50	15-30	0-5	---	NP
[illegible]	0-3	Very gravelly loamy sand.	GP-GM, GM	A-1	0-5	45-55	35-45	15-30	5-15	---	NP
	3-60	Stratified cobbly coarse sand to very gravelly loamy sand.	GP-GM, GP	A-1	0-35	35-55	20-50	10-30	0-10	---	NP
[illegible]	0-1	Very gravelly sandy loam.	GM	A-1	0-10	25-55	25-50	15-40	10-25	---	NP
	1-10	Very gravelly sandy loam.	GM-GC	A-2	0-5	25-55	25-50	15-35	10-25	20-25	5-10
	10-42	Stratified very gravelly loamy sand to very gravelly sand.	GP, GP-GC	A-1	0-5	25-55	25-50	15-30	0-10	---	NP
	42-60	Very cobbly sand, very cobbly coarse sand.	GP	A-1	0-5	25-55	25-50	15-30	0-5	---	NP

See footnote at end of table.

TABLE H.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
108*: Nickel	0-22	Very gravelly sandy loam.	GP-GM, GM	A-1	0-5	15-35	15-35	10-20	5-15	---	NP
	22-40	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-20	20-40	10-35	5-30	5-15	---	NP
	40-60	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-25	20-45	15-40	10-30	5-15	---	NP
109*: Bluepoint	0-7	Loamy sand	SM	A-2	0	90-100	90-100	50-85	20-35	---	NP
	7-60	Loamy fine sand, fine sand.	SM	A-2	0	90-100	90-100	70-80	15-25	---	NP
Arizo	0-6	Gravelly loamy sand.	SP-SM, SM	A-1	0-5	55-80	50-75	25-50	5-20	---	NP
	6-60	Stratified cobbly coarse sand to very gravelly loamy sand.	GP-GM, GP	A-1	0-35	35-55	20-50	10-30	0-10	---	NP
110*: Bluepoint	0-7	Loamy sand	SM	A-2	0	90-100	90-100	50-85	20-35	---	NP
	7-60	Loamy fine sand, fine sand.	SM	A-2	0	90-100	90-100	70-80	15-25	---	NP
Arizo	0-8	Gravelly loamy sand.	SP-SM, SM	A-1	0-5	55-80	50-75	25-50	5-20	---	NP
	8-60	Stratified cobbly coarse sand to very gravelly loamy sand.	GP-GM, GP	A-1	0-35	35-55	20-50	10-30	0-10	---	NP
Cajon	0-12	Loamy sand	SM	A-2	0	95-100	75-100	50-80	10-30	---	NP
	12-60	Gravelly sand, gravelly loamy sand.	SM, SP-SM	A-1	0	60-85	50-75	25-50	5-20	---	NP
111 Gila	0-5	Loam	ML	A-4	0	95-100	95-100	80-90	60-70	---	NP
	5-60	Stratified silt loam to fine sandy loam.	ML	A-4	0	95-100	95-100	80-95	60-75	15-25	NP-5
112*: Gila	0-11	Silt loam	ML	A-4	0	95-100	95-100	85-95	60-70	---	NP
	11-43	Stratified silt loam to fine sandy loam.	ML	A-4	0	95-100	95-100	80-95	60-75	15-25	NP-5
	43-60	Loamy sand, loamy fine sand.	SM	A-2	0	95-100	95-100	---	20-30	---	---
Playa.											
113*: Gothard Variant	0-2		ML	A-4	0	90-100	85-95	80-90	50-60	20-30	NP-5
	2-11	Loam, sandy clay loam, clay loam.	CL	A-6	0	100	95-100	75-90	45-70	25-35	10-20
	11-60	Clay loam, silty clay loam.	CL	A-6	0	100	100	95-100	75-95	30-40	10-20
Badland.											

See footnote at end of table.

TABLE H.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
114*: Knob Hill	0-2	Gravelly loamy sand.	GM, SM	A-1	0-5	55-80	50-75	30-50	10-25	---	NP
	2-13	Stratified sandy loam to very gravelly loamy sand.	GM, SM	A-1	0-10	50-75	50-70	30-50	10-25	---	NP
	13-26	Gravelly fine sandy loam, gravelly loamy sand.	GM, SM	A-1, A-2	0-5	50-75	50-70	30-60	10-30	---	NP
	26-60	Stratified loamy fine sand to very gravelly loamy sand.	GM, SM	A-1, A-2	0-10	50-75	50-70	30-60	10-25	---	NP
Blackmount	0-1	Very gravelly sandy loam.	GM	A-1	0-10	25-55	25-50	15-40	10-25	---	NP
	1-10	Very gravelly sandy loam.	GM-GC	A-2	0-5	25-55	25-50	15-35	10-25	20-25	5-10
	10-42	Stratified very gravelly loamy sand to very gravelly sand.	GP, GP-GC	A-1	0-5	25-55	25-50	15-30	0-10	---	NP
	42-60	Very cobbly sand, very cobbly coarse sand.	GP	A-1	0-5	25-55	25-50	15-30	0-5	---	NP
115 Nickel	0-22	Very gravelly sandy loam.	GP-GM, GM	A-1	0-5	15-35	15-35	10-20	5-15	---	NP
	22-40	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-20	20-40	10-35	5-30	5-15	---	NP
	40-60	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-25	20-45	15-40	10-30	5-15	---	NP
116 Nickel	0-20	Very gravelly sandy loam.	GP-GM, GM	A-1	0-5	15-35	15-35	10-20	5-15	---	NP
	20-42	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-20	20-40	10-35	5-30	5-15	---	NP
	42-60	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-25	20-45	15-40	10-30	5-15	---	NP

See footnote at end of table.

TABLE H.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
[illegible]	0-2	Very stony sandy loam.	GM, SM	A-1, A-2	20-50	45-65	40-60	25-40	10-20	---	NP
	2-22	Very gravelly sandy loam, very cobbly sandy loam.	GM, SM	A-1, A-2	20-50	25-75	25-70	20-50	10-30	---	NP
	22-40	Very gravelly sandy loam, very cobbly sandy loam.	GM, SM	A-1, A-2	20-50	25-75	25-70	20-50	10-30	---	NP
	40-60	Very gravelly sandy loam, very cobbly sandy loam.	GM, SM	A-1, A-2	20-50	25-75	25-70	20-50	10-30	---	NP
[illegible]	0-20	Very gravelly sandy loam.	GP-GM, GM	A-1	0-5	15-35	15-35	10-20	5-15	---	NP
	20-42	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-20	20-40	10-35	5-30	5-15	---	NP
	42-60	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-25	20-45	15-40	10-30	5-15	---	NP
[illegible]	0-5	Very gravelly loamy sand.	GP-GM, GM	A-1	0-5	45-55	35-45	15-30	5-15	---	NP
	5-60	Stratified cobbly coarse sand to very gravelly loamy sand.	GP-GM, GP	A-1	0-35	35-55	20-50	10-30	0-10	---	NP
[illegible]	0-9	Very gravelly sandy loam.	GP-GM, GM	A-1	0-5	15-35	15-35	10-20	5-15	---	NP
	9-36	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-20	20-40	10-35	5-30	5-15	---	NP
	36-60	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-25	20-45	15-40	10-30	5-15	---	NP
[illegible]	0-3	Very gravelly sandy loam.	GP-GM, GM	A-1	0-10	25-45	25-40	15-30	5-15	---	NP
	3-17	Very gravelly sandy loam, very gravelly sandy clay loam, very gravelly loam.	GM-GC, GC	A-2	0-10	25-45	25-40	20-35	10-30	20-30	5-15
	17-60	Very gravelly loamy sand, very gravelly sand, very cobbly sand.	GP, GP-GM, SM, SP-SM	A-1	10-50	30-75	30-70	15-45	0-20	---	NP

See footnote at end of table.

TABLE H.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
121*: Nickel	0-22	Very gravelly sandy loam.	GP-GM, GM	A-1	0-5	15-35	15-35	10-20	5-15	---	NP
	22-40	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-20	20-40	10-35	5-30	5-15	---	NP
	40-60	Very gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sa.	GP-GM, GM	A-1	0-25	20-45	15-40	10-30	5-15	---	NP
Grapevine	0-7	Gravelly fine sandy loam.	SM	A-2	0-5	65-80	60-75	50-65	20-35	20-25	NP-5
	7-21	Gravelly sandy loam, gravelly fine sandy loam.	SM, GM	A-1, A-2	0-5	50-80	50-75	30-60	15-35	20-25	NP-5
	21-60	Gravelly loam, gravelly sandy loam, gravelly fine sandy loam.	SM, GM	A-1, A-2, A-4	0-5	50-80	50-75	35-65	20-45	20-30	NP-5
	60-70	Sandy loam	SM	A-2, A-4	0-5	80-95	75-90	50-70	25-45	---	NP
122*: Rock outcrop.											
Tecopa	0-1	Very gravelly sandy loam.	GP-GM, GM	A-1	0-20	25-50	25-50	15-35	5-20	---	NP
	1-7	Very gravelly sandy loam, very gravelly loam.	GP-GM, GM	A-1	0-30	20-50	15-50	10-35	5-20	---	NP
	7	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
St. Thomas	0-1	Very gravelly fine sandy loam.	GM	A-1	5-30	25-55	25-50	20-45	10-25	25-30	NP-5
	1-11	Very cobbly loam, very gravelly loam, very gravelly fine sandy loam.	GM	A-1, A-2	15-50	25-45	25-40	20-35	10-30	25-30	NP-5
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
123*: Rock outcrop.											
St. Thomas	0-1	Very gravelly fine sandy loam.	GM	A-1	5-30	25-55	25-50	20-45	10-25	25-30	NP-5
	1-11	Very cobbly loam, very gravelly loam, very gravelly fine sandy loam.	GM	A-1, A-2	15-50	25-45	25-40	20-35	10-30	25-30	NP-5
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
124*: Rock outcrop.											
Virgin Peak	0-9	Very cobbly sandy loam.	GP-GM, GM, SP-SM, SM	A-1, A-2	30-60	35-75	25-70	15-50	5-30	20-25	NP-5
	9	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Typic Haplustolls.											

See footnote at end of table.

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
125*: Tecopa	0-1	Very gravelly sandy loam.	GP-GM, GM	A-1	0-20	25-50	25-50	15-35	5-20	---	NP
	1-7	Very gravelly sandy loam, very gravelly loam.	GP-GM, GM	A-1	0-30	20-50	15-50	10-35	5-20	---	NP
	7	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
126*: Theriot	0-1	Very gravelly sandy loam.	GM, SM	A-1, A-2	20-35	40-70	40-65	25-50	10-30	---	NP
	1-10	Very stony loam, very cobbly loam, very gravelly sandy loam.	GP-GM, GM, SM	A-1, A-2, A-4	20-55	30-75	25-75	15-60	5-50	25-30	NP-5
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

* See description of the map unit for composition and behavior characteristics of the map unit.

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	In/hr	In/in	pH	Mmhos/cm					Pct
100-------------	0-6	0-5	>20	0.05-0.07	7.4-9.0	<2	Low-------	0.10	5	3	<.5
Arizo	6-60	0-5	>20	0.04-0.06	7.4-9.0	<2	Low-------	0.10			
101-------------	0-5	2-8	6.0-20	0.04-0.06	7.4-9.0	<2	Low-------	0.15	5	4	<.5
Arizo	5-60	0-5	>20	0.04-0.06	7.4-9.0	<2	Low-------	0.10			
102-------------	0-5	0-5	6.0-20	0.04-0.06	>7.8	>8	Low-------	0.10	5	8	<.5
Arizo	5-6	0-5	>20	0.04-0.06	>7.8	>8	Low-------	0.10			
103-------------	0-8	0-5	6.0-20	0.03-0.05	7.4-9.0	<2	Low-------	0.10	5	8	<.5
Arizo	8-60	2-10	>20	0.04-0.06	7.4-9.0	<2	Low-------	0.10			
104*. Badland											
105*:											
Bitter-----------	0-3	5-10	2.0-6.0	0.05-0.07	7.9-9.0	<2	Low-------	0.15	5	---	<.5
	3-17	18-27	0.2-0.6	0.07-0.09	7.9-9.0	<2	Moderate	0.15			
	17-60	0-5	>20	0.03-0.05	7.9-9.0	<8	Low-------	0.10			
Arizo-----------	0-6	2-8	6.0-20	0.04-0.06	7.4-9.0	<2	Low-------	0.15	5	4	<.5
	6-60	0-5	>20	0.04-0.06	7.4-9.0	<2	Low-------	0.10			
Nickel----------	0-22	3-8	20-6.0	0.04-0.06	7.9-9.0	<2	Low-------	0.15	5	8	<.5
	22-40	5-10	0.2-0.6	0.04-0.06	7.9-9.0	<4	Low-------	0.15			
	40-60	3-8	2.0-6.0	0.04-0.06	7.9-9.0	<4	Low-------	0.15			
106*:											
Bitter-----------	0-3	5-10	2.0-6.0	0.05-0.07	7.9-9.0	<2	Low-------	0.15	5	---	<.5
	3-17	18-27	0.2-0.6	0.07-0.09	7.9-9.0	<2	Moderate	0.15			
	17-60	0-5	>20	0.03-0.05	7.9-9.0	<8	Low-------	0.10			
Cave------------	0-10	10-20	0.6-2.0	0.07-0.12	7.9-8.4	2-4	Low-------	0.28	1	4L	<.5
	10	---	---	---	---	---	-----------	----			
Nickel----------	0-9	3-8	20-6.0	0.04-0.06	7.9-9.0	<2	Low-------	0.15	5	8	<.5
	9-36	5-10	0.2-0.6	0.04-0.06	7.9-9.0	<4	Low-------	0.15			
	36-60	3-8	2.0-6.0	0.04-0.06	7.9-9.0	<4	Low-------	0.15			
107*:											
Blackmount------	0-1	3-9	2.0-6.0	0.05-0.07	---	<2	Low-------	0.17	5	8	<.5
	1-10	9-18	0.6-2.0	0.06-0.08	---	2-16	Low-------	0.15			
	10-42	0-5	6.0-20	0.04-0.06	---	>4	Low-------	0.10			
	42-60	0-3	>20	0.03-0.05	---	<4	Low-------	0.10			
Arizo-----------	0-3	2-8	6.0-20	0.04-0.06	7.4-9.0	<2	Low-------	0.15	5	4	<.5
	3-60	0-5	>20	0.04-0.06	7.4-9.0	<2	Low-------	0.10			
108*:											
Blackmount------	0-1	3-9	2.0-6.0	0.05-0.07	---	<2	Low-------	0.17	5	8	<.5
	1-10	9-18	0.6-2.0	0.06-0.08	---	2-16	Low-------	0.15			
	10-42	0-5	6.0-20	0.04-0.06	---	>4	Low-------	0.10			
	42-60	0-3	>20	0.03-0.05	---	<4	Low-------	0.10			
Nickel----------	0-22	3-8	20-6.0	0.04-0.06	7.9-9.0	<2	Low-------	0.15	5	8	<.5
	22-40	5-10	0.2-0.6	0.04-0.06	7.9-9.0	<4	Low-------	0.15			
	40-60	3-8	2.0-6.0	0.04-0.06	7.9-9.0	<4	Low-------	0.15			
109*:											
Bluepoint-------	0-7	3-8	6.0-20	0.07-0.09	7.9-9.0	<4	Low-------	0.15	5	2	<.5
	7-60	0-5	6.0-20	0.07-0.09	7.9-9.0	<8	Low-------	0.15			

See footnote at end of table.

TABLE 3.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	In/hr	In/in	pH	Mmhos/cm					Pct
[illegible]	0-6	0-5	>20	0.05-0.07	7.4-9.0	<2	Low--------	0.10	5	3	<.5
	6-60	0-5	>20	0.04-0.06	7.4-9.0	<2	Low--------	0.10			
[illegible]	0-7	3-8	6.0-20	0.07-0.09	7.9-9.0	<4	Low--------	0.15	5	2	<.5
	7-60	0-5	6.0-20	0.07-0.09	7.9-9.0	<8	Low--------	0.15			
[illegible]	0-8	0-5	>20	0.05-0.07	7.4-9.0	<2	Low--------	0.10	5	3	<.5
	8-60	0-5	>20	0.04-0.06	7.4-9.0	<2	Low--------	0.10			
[illegible]	0-12	0-8	6.0-20	0.06-0.10	7.4-8.4	<2	Low--------	0.15	5	2	<1
	12-60	0-5	6.0-20	0.04-0.08	7.4-8.4	<2	Low--------	0.10			
[illegible]	0-5	12-18	0.6-2.0	0.15-0.17	7.9-9.0	>16	Low--------	0.49	5	5	<.5
	5-60	8-18	0.6-2.0	0.15-0.17	7.9-9.0	>4	Low--------	0.49			
[illegible]	0-11	12-18	0.6-2.0	0.15-0.17	>7.8	>2	Low--------	0.37	5	5	.5-1
	11-43	8-18	0.6-2.0	0.15-0.17	>7.8	>2	Low--------	0.49			
	43-60	0-5	6.0-20	0.06-0.08	>7.8	<2	Low--------	0.17			
[illegible]											
[illegible] Variant-	0-2	8-15	0.6-2.0	0.16-0.18	8.5-9.0	<2	Low--------	0.49	5	4L	<.5
	2-11	20-30	0.06-0.2	0.10-0.12	>8.4	4-16	Moderate	0.43			
	11-60	27-35	<0.06	0.07-0.09	>8.4	>16	High------	0.28			
[illegible]											
[illegible] Fill-------	0-2	3-8	6.0-20	0.05-0.07	7.9-8.4	<2	Low--------	0.17	5	5	<.5
	2-13	3-10	2.0-6.0	0.06-0.08	7.9-8.4	<2	Low--------	0.17			
	13-26	3-10	2.0-6.0	0.06-0.08	7.9-9.0	<8	Low--------	0.17			
	26-60	3-8	6.0-20	0.05-0.07	>7.8	<4	Low--------	0.17			
[illegible]------	0-1	3-9	2.0-6.0	0.05-0.07	---	<2	Low--------	0.17	5	8	<.5
	1-10	9-18	0.6-2.0	0.06-0.08	---	2-16	Low--------	0.15			
	10-42	0-5	6.0-20	0.04-0.06	---	>4	Low--------	0.10			
	42-60	0-3	>20	0.03-0.05	---	<4	Low--------	0.10			
[illegible]	0-22	3-8	20-6.0	0.04-0.06	7.9-9.0	<2	Low--------	0.15	5	8	<.5
	22-40	5-10	0.2-0.6	0.04-0.06	7.9-9.0	<4	Low--------	0.15			
	40-60	3-8	2.0-6.0	0.04-0.06	7.9-9.0	<4	Low--------	0.15			
[illegible]	0-20	3-8	20-6.0	0.04-0.06	7.9-9.0	<2	Low--------	0.15	5	8	<.5
	20-42	5-10	0.2-0.6	0.04-0.06	7.9-9.0	<4	Low--------	0.15			
	42-60	3-8	2.0-6.0	0.04-0.06	7.9-9.0	<4	Low--------	0.15			
[illegible]	0-2	3-8	2.0-6.0	0.04-0.06	7.9-9.0	<2	Low--------	0.15	5	8	<.5
	2-22	3-8	2.0-6.0	0.04-0.06	7.9-9.0	<2	Low--------	0.15			
	22-40	5-10	0.2-0.6	0.05-0.07	7.9-9.0	<4	Low--------	0.15			
	40-60	3-8	2.0-6.0	0.04-0.06	7.9-9.0	<4	Low--------	0.15			
[illegible]	0-20	3-8	20-6.0	0.04-0.06	7.9-9.0	<2	Low--------	0.15	5	8	<.5
	20-42	5-10	0.2-0.6	0.04-0.06	7.9-9.0	<4	Low--------	0.15			
	42-60	3-8	2.0-6.0	0.04-0.06	7.9-9.0	<4	Low--------	0.15			
[illegible]	0-5	2-8	6.0-20	0.04-0.06	7.4-9.0	<2	Low--------	0.15	5	4	<.5
	5-60	0-5	>20	0.04-0.06	7.4-9.0	<2	Low--------	0.10			
[illegible]	0-9	3-8	20-6.0	0.04-0.06	7.9-9.0	<2	Low--------	0.15	5	8	<.5
	9-36	5-10	0.2-0.6	0.04-0.06	7.9-9.0	<4	Low--------	0.15			
	36-60	3-8	2.0-6.0	0.04-0.06	7.9-9.0	<4	Low--------	0.15			

See footnote at end of table.

TABLE J.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	In/hr	In/in	pH	Mmhos/cm					Pct
[illegible]*:											
[illegible]----------	0-3	5-10	2.0-6.0	0.05-0.07	7.9-9.0	<2	Low-------	0.15	5	---	<.5
	3-17	18-27	0.2-0.6	0.07-0.09	7.9-9.0	<2	Moderate	0.15			
	17-60	0-5	>20	0.03-0.05	7.9-9.0	<8	Low-------	0.10			
[illegible]*:											
[illegible]----------	0-22	3-8	20-6.0	0.04-0.06	7.9-9.0	<2	Low-------	0.15	5	8	<.5
	22-40	5-10	0.2-0.6	0.04-0.06	7.9-9.0	<4	Low-------	0.15			
	40-60	3-8	2.0-6.0	0.04-0.06	7.9-9.0	<4	Low-------	0.15			
[illegible]-------	0-7	5-12	2.0-6.0	0.08-0.10	7.9-8.4	<2	Low-------	0.28	5	5	<.5
	7-21	5-12	2.0-6.0	0.08-0.10	7.9-8.4	<2	Low-------	0.28			
	21-60	5-15	0.6-2.0	0.09-0.11	7.9-9.0	2-8	Low-------	0.28			
	60-70	3-10	2.0-6.0	0.12-0.14	7.9-9.0	2-8	Low-------	0.32			
[illegible]*:											
Rock outcrop.											
[illegible]----------	0-1	4-8	2.0-6.0	0.04-0.06	7.9-8.4	<2	Low-------	0.15	1	8	<.5
	1-7	6-10	0.6-2.0	0.04-0.06	7.9-8.4	<4	Low-------	0.15			
	7	---	---	---	---	---	----------	----			
St. Thomas------	0-1	4-9	2.0-6.0	0.04-0.06	7.9-9.0	<2	Low-------	0.17	1	8	---
	1-11	8-15	2.0-6.0	0.04-0.07	7.9-9.0	<4	Low-------	0.17			
	11	---	---	---	---	---	----------	----			
[illegible]*:											
Rock outcrop.											
St. Thomas------	0-1	4-9	2.0-6.0	0.04-0.06	7.9-9.0	<2	Low-------	0.17	1	8	---
	1-11	8-15	2.0-6.0	0.04-0.07	7.9-9.0	<4	Low-------	0.17			
	11	---	---	---	---	---	----------	----			
[illegible]*:											
Rock outcrop.											
[illegible] Peak-----	0-9	4-10	2.0-6.0	0.04-0.06	6.6-7.3	<2	Low-------	0.17	1	8	1-3
	9	---	---	---	---	---	----------	----			
[illegible] Argiustolls.											
[illegible]*:											
[illegible]----------	0-1	4-8	2.0-6.0	0.04-0.06	7.9-8.4	<2	Low-------	0.15	1	8	<.5
	1-7	6-10	0.6-2.0	0.04-0.06	7.9-8.4	<4	Low-------	0.15			
	7	---	---	---	---	---	----------	----			
Rock outcrop.											
[illegible]*:											
[illegible]----------	0-1	5-10	0.6-2.0	0.04-0.06	>7.8	<2	Low-------	0.17	1	8	<1
	1-10	5-14	0.6-2.0	0.04-0.06	>7.8	<4	Low-------	0.17			
	10	---	---	---	---	---	----------	----			
Rock outcrop.											

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE K.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the Glossary explain terms such as "rare," "brief," "apparent," and "perched." The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Cemented pan		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Depth	Hardness	Uncoated steel	Concrete
					Ft			In		In			
100, 101 Arizo	A	Occasional	Very brief	Mar-Sep	>6.0	---	---	>60	---	---	---	Moderate	Low.
102 Arizo	A	Occasional	Very brief	Mar-Sep	>6.0	---	---	>60	---	---	---	High	High.
103 Arizo	A	Occasional	Very brief	Mar-Sep	>6.0	---	---	>60	---	---	---	Moderate	Low.
104*. Badland													
105*:													
Bitter	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Low.
Arizo	A	Occasional	Very brief	Mar-Sep	>6.0	---	---	>60	---	---	---	Moderate	Low.
Wickel	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Low.
106*:													
Bitter	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Low.
Cavo	D	None	---	---	>6.0	---	---	>60	---	4-20	Thick	High	Low.
Wickel	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Low.
107*:													
Blackmount	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Moderate.
Arizo	A	Occasional	Very brief	Mar-Sep	>6.0	---	---	>60	---	---	---	Moderate	Low.
108*:													
Blackmount	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Moderate.
Wickel	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Low.
109*:													
Bluepoint	A	Rare	---	---	>6.0	---	---	>60	---	---	---	High	High.
Arizo	A	Occasional	Very brief	Mar-Sep	>6.0	---	---	>60	---	---	---	Moderate	Low.
110*:													
Bluepoint	A	Rare	---	---	>6.0	---	---	>60	---	---	---	High	High.
Arizo	A	Occasional	Very brief	Mar-Sep	>6.0	---	---	>60	---	---	---	Moderate	Low.
Cajon	A	None to rare	---	---	>6.0	---	---	>60	---	---	---	Moderate	Low.
111 Gila	B	Occasional	Very brief	Jun-Sep	>6.0	---	---	>60	---	---	---	High	Moderate.

See footnote at end of table.

TABLE K.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Cemented pan		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Depth	Hardness	Uncoated steel	Concrete
					Ft			In		In			
112*:													
Gila	B	Occasional	Very brief	Jun-Sep	4.0-5.0	Apparent	Mar-Oct	>60	---	---	---	High	Moderate.
Playa.													
113*:													
Cothard Variant	D	Rare	---	---	>6.0	---	---	>60	---	---	---	High	High.
Badland.													
114*:													
Knob Hill	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Low.
Blackmount	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Moderate.
115, 116, 117, 118 Nickel	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Low.
119*:													
Nickel	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Low.
Arizo	A	Occasional	Very brief	Mar-Sep	>6.0	---	---	>60	---	---	---	Moderate	Low.
120*:													
Nickel	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Low.
Bitter	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Low.
121*:													
Nickel	B	None	---	---	>6.0	---	---	>60	---	---	---	High	Low.
Grapevine	B	Rare	---	---	>6.0	---	---	>60	---	---	---	High	High.
122*:													
Rock outcrop.													
Tecopa	D	None	---	---	>6.0	---	---	2-10	Hard	---	---	High	Low.
St. Thomas	D	None	---	---	>6.0	---	---	4-20	Hard	---	---	High	Low.
123*:													
Rock outcrop.													
St. Thomas	D	None	---	---	>6.0	---	---	4-20	Hard	---	---	High	Low.
124*:													
Rock outcrop.													
Virgin Peak	D	None	---	---	>6.0	---	---	8-20	Hard	---	---	Moderate	Low.
Typic Haplustolls.													

See footnote at end of table.

TABLE K.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Cemented pan		Risk of corrosio	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Depth	Hardness	Uncoated steel	Concr
					Ft			In		In			
[illegible]*: [illegible] Rock outcrop.	D	None	---	---	>6.0	---	---	2-10	Hard	---	---	High	Low.
[illegible]*: [illegible] Rock outcrop.	D	None	---	---	>6.0	---	---	4-20	Hard	---	---	High	Low.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE L.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
100, 101 Arizo	Severe: floods, poor filter.	Severe: seepage, floods.	Severe: floods, too sandy.	Severe: floods.	Poor: seepage, too sandy, small stones.
102 Arizo	Severe: floods.	Severe: floods.	Severe: floods, excess salt.	Severe: floods.	Poor: thin layer.
103 Arizo	Severe: floods, poor filter, large stones.	Severe: seepage, floods, slope.	Severe: floods, too sandy, large stones.	Severe: floods.	Poor: seepage, too sandy, small stones.
104*. Badland					
105*: Bitter	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
Arizo	Severe: floods, poor filter.	Severe: seepage, floods.	Severe: floods, too sandy.	Severe: floods.	Poor: seepage, too sandy, small stones.
Nickel	Severe: slope, percs slowly.	Severe: slope, small stones.		Severe: slope.	Poor: slope, small stones.
106*: Bitter	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
Cave	Severe: cemented pan.	Severe: seepage, cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Poor: area reclaim, small stones.
Nickel	Severe: slope, percs slowly.	Severe: slope, small stones.		Severe: slope.	Poor: slope, small stones.
107*: Blackmount	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy, excess salt.	Severe: seepage.	Poor: seepage, too sandy, small stones.
Arizo	Severe: floods, poor filter.	Severe: seepage, floods.	Severe: floods, too sandy.	Severe: floods.	Poor: seepage, too sandy, small stones.
108*: Blackmount	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy, excess salt.	Severe: seepage.	Poor: seepage, too sandy, small stones.

See footnote at end of table.

TABLE L.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
108*:					
Rickel	Severe: slope, percs slowly.	Severe: slope, small stones.		Severe: slope.	Poor: slope, small stones.
109*: Bluepoint	Severe: poor filter.	Severe: seepage, floods.	Severe: too sandy.	Moderate: floods.	Poor: too sandy.
Arizo	Severe: floods, poor filter.	Severe: seepage, floods.	Severe: floods, too sandy.	Severe: floods.	Poor: seepage, too sandy, small stones.
110*: Bluepoint	Severe: poor filter.	Severe: seepage, floods.	Severe: too sandy.	Moderate: floods.	Poor: too sandy.
Arizo	Severe: floods, poor filter.	Severe: seepage, floods.	Severe: floods, too sandy.	Severe: floods.	Poor: seepage, too sandy, small stones.
Cajon	Severe: poor filter.		Severe: too sandy.		Poor: seepage, too sandy.
111 Gila	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Good.
112*: Gila	Severe: floods, poor filter.	Severe: floods.	Severe: floods, wetness, excess salt.	Severe: floods.	Good.
Playas.					
113*: Gothard Variant	Severe: percs slowly.	Severe: floods.	Severe: excess salt.	Moderate: floods.	Poor: excess salt.
Badland.					
114*: Knob Hill	Severe: poor filter.	Severe: seepage.	Moderate: too sandy.	Slight	Poor: small stones.
Blackmount	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy, excess salt.	Severe: seepage.	Poor: seepage, too sandy, small stones.
115 Rickel	Severe: slope, percs slowly.	Severe: slope, small stones.		Severe: slope.	Poor: slope, small stones.
116 Rickel	Severe: slope, percs slowly.	Severe: slope, small stones.	Severe: small stones.	Severe: slope.	Poor: slope, small stones.
117 Rickel	Severe: percs slowly.	Severe: seepage, slope, large stones.	Severe: large stones.	Moderate: slope.	Poor: small stones.

See footnote at end of table.

TABLE L.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
118----------------- Nickel	Severe: percs slowly, slope.	Severe: seepage, slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
119*: Nickel-------------	Severe: slope, percs slowly.	Severe: slope, small stones.		Severe: slope.	Poor: slope, small stones.
Arizo---------------	Severe: floods, poor filter.	Severe: seepage, floods.	Severe: floods, too sandy.	Severe: floods.	Poor: seepage, too sandy, small stones.
120*: Nickel-------------	Severe: slope, percs slowly.	Severe: slope, small stones.	Severe: small stones.	Severe: slope.	Poor: slope, small stones.
Bitter--------------	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
121*: Nickel-------------	Severe: slope, percs slowly.	Severe: slope, small stones.		Severe: slope.	Poor: slope, small stones.
Grapevine----------	Moderate: floods, percs slowly.	Severe: seepage, floods.	Moderate: floods.	Moderate: floods.	Poor: small stones.
122*: Rock outcrop.					
Tecopa-------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
St. Thomas---------	Severe: slope, depth to rock.	Severe: depth to rock, slope, small stones.	Severe: depth to rock, small stones, slope.	Severe: slope.	Poor: thin layer, small stones, slope.
123*: Rock outcrop.					
St. Thomas---------	Severe: slope, depth to rock.	Severe: depth to rock, slope, small stones.	Severe: depth to rock, small stones, slope.	Severe: slope.	Poor: thin layer, small stones, slope.
124*: Rock outcrop.					
Virgin Peak--------	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
Typic haplustolls.					
125*: Tecopa-------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.

See footnote at end of table.

TABLE L.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
125*:					
Rock outcrop.					
126*:					
Theriot	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock.	Poor: area reclaim, seepage, small stones.
Rock outcrop.					

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
100--------------- Arizo	Severe: cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: droughty.
101--------------- Arizo	Severe: cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: small stones, droughty.
102--------------- Arizo	Moderate: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: excess salt, small stones, droughty.
103--------------- Arizo	Severe: cutbanks cave, large stones.	Severe: floods, large stones.	Severe: floods, large stones.	Severe: floods, slope, large stones.	Severe: floods, large stones.	Severe: large stones, droughty.
104*. Badland						
105*: Bitter-----------	Severe: cutbanks cave.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: large stones.	Severe: small stones, droughty.
Arizo------------	Severe: cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: small stones, droughty.
Nickel-----------	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty.
106*: Bitter-----------	Severe: cutbanks cave.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: large stones.	Severe: small stones, droughty.
Cave-------------	Severe: cemented pan, cutbanks cave.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: thin layer.
Nickel-----------	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty.
107*: Blackmount-------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Severe: small stones, droughty.
Arizo------------	Severe: cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: small stones, droughty.
108*: Blackmount-------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Severe: small stones, droughty.
Nickel-----------	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty.

See footnote at end of table.

TABLE M.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
109*:						
Bluepoint	Severe: cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods.	Moderate: droughty.
Arizo	Severe: cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: droughty.
110*:						
Bluepoint	Severe: cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods.	Moderate: droughty.
Arizo	Severe: cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: droughty.
Cajon	Severe: cutbanks cave.					Moderate: droughty.
111 Gila	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: excess salt.
112*:						
Gila	Moderate: wetness, floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: excess salt.
Playa.						
113*:						
Gothard Variant	Slight	Severe: floods, shrink-swell.	Severe: floods, shrink-swell.	Severe: floods, shrink-swell.	Severe: low strength, shrink-swell.	Moderate: droughty.
Badland.						
114*:						
Knob Hill	Severe: cutbanks cave.	Slight	Slight		Slight	Moderate: small stones, droughty.
Blackmount	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: small stones, droughty.
115 Nickel	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty.
116 Nickel	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty, slope.
117 Nickel	Moderate: large stones, slope.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, large stones.	Severe: small stones, large stones, droughty.
118 Nickel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, large stones, droughty.
119*:						
Nickel	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty.
Arizo	Severe: cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: small stones, droughty.

See footnote at end of table.

TABLE M.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
120*:						
Nickel	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty, slope.
Bitter	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty, slope.
121*:						
Nickel	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty.
Grapevine	Slight	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods.	Moderate: small stones, droughty.
122*:						
Rock outcrop.						
Tecopa	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, droughty, slope.
St. Thomas	Severe: slope, depth to rock, small stones.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: droughty, slope.
123*:						
Rock outcrop.						
St. Thomas	Severe: slope, depth to rock, small stones.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: droughty, slope.
124*:						
Rock outcrop.						
Virgin Peak	Severe: depth to rock, large stones, slope.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: small stones, large stones, slope.
Typic haplustolls.						
125*:						
Tecopa	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, droughty, slope.
Rock outcrop.						
126*:						
Theriot	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: small stones, large stones, droughty.
Rock outcrop.						

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE N.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
100, 101 Arizo	Fair: large stones.	Probable	Probable	Poor: small stones, area reclaim.
102 Arizo	Good	Probable	Probable	Poor: small stones, excess salt.
103 Arizo	Poor: large stones.	Probable	Probable	Poor: small stones, area reclaim.
104*. Badland				
105*:				
Bitter	Fair: large stones.	Probable	Probable	Poor: small stones, area reclaim.
Arizo	Fair: large stones.	Probable	Probable	Poor: small stones, area reclaim.
Nickel		Probable	Probable	Poor: slope, small stones.
106*:				
Bitter	Fair: large stones.	Probable	Probable	Poor: small stones, area reclaim.
Cave	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Nickel		Probable	Probable	Poor: slope, small stones.
107*:				
Blackmount	Good	Probable	Probable	Poor: small stones, area reclaim.
Arizo	Fair: large stones.	Probable	Probable	Poor: small stones, area reclaim.
108*:				
Blackmount	Good	Probable	Probable	Poor: small stones, area reclaim.
Nickel		Probable	Probable	Poor: slope, small stones.
109*:				
Bluepoint	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.

See footnote at end of table.

TABLE M.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
109*: Arizo	Fair: large stones.	Probable	Probable	Poor: small stones, area reclaim.
110*: Bluepoint	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Arizo	Fair: large stones.	Probable	Probable	Poor: small stones, area reclaim.
Cajon	Good	Probable	Improbable: thin layer.	Poor: small stones.
111 Gila	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
112*: Gila	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
Playa.				
113*: Gothard Variant	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Badland.				
114*: Knob Hill	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Blackmount	Good	Probable	Probable	Poor: small stones, area reclaim.
115 Nickel		Probable	Probable	Poor: slope, small stones.
116 Nickel	Fair: slope.	Probable	Probable	Poor: slope, small stones.
117 Nickel	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
118 Nickel	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
119*: Nickel		Probable	Probable	Poor: slope, small stones.
[illegible]	Fair: large stones.	Probable	Probable	Poor: small stones, area reclaim.

See footnote at end of table.

TABLE W.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
120*:				
Nickel	Fair: slope.	Probable	Probable	Poor: slope, small stones.
Bitter	Fair: large stones, slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
121*:				
Nickel		Probable	Probable	Poor: slope, small stones.
Grapevine	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
122*: Rock outcrop.				
Tecopa	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
St. Thomas	Poor: thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, large stones, slope.
123*: Rock outcrop.				
St. Thomas	Poor: thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, large stones, slope.
124*: Rock outcrop.				
Virgin Peak	Poor: area reclaim, large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Typic haplustolls.				
125*: Tecopa	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
126*: Theriot	Poor: area reclaim, large stones.	Improbable: small stones, large stones.	Improbable: large stones.	Poor: area reclaim, small stones.
Rock outcrop.				

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE P.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated]

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions
100, 101 Arizo	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, droughty, fast intake.	Large stones, too sandy.
102 Arizo	Slight	Severe: excess salt.	Severe: no water.	Deep to water	Droughty, fast intake, floods.	Large stones.
103 Arizo	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Large stones, droughty, fast intake.	Slope, large stones, too sandy.
104*. Badland						
105*:						
Bitter	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, droughty, slope.	Large stones, too sandy.
Arizo	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, droughty, fast intake.	Large stones, too sandy.
Nickel	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, slope.	Slope, small stones.
106*:						
Bitter	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, droughty, slope.	Large stones, too sandy.
Cave	Severe: seepage, cemented pan.	Severe: seepage.	Severe: no water.	Deep to water	Cemented pan, slope.	Cemented pan, too sandy.
Nickel	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, slope.	Slope, small stones.
107*:						
Blackmount	Severe: seepage.	Severe: seepage, excess salt.	Severe: no water.	Deep to water	Droughty, slope, excess salt.	Too sandy.
Arizo	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, droughty, fast intake.	Large stones, too sandy.
108*:						
Blackmount	Severe: seepage.	Severe: seepage, excess salt.	Severe: no water.	Deep to water	Droughty, slope, excess salt.	Too sandy.
Nickel	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, slope.	Slope, small stones.
109*:						
Bluepoint	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.
Arizo	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, droughty, fast intake.	Large stones, too sandy.

See footnote at end of table.

TABLE P.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions
110*:						
Bluepoint	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.
Arizo	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, droughty, fast intake.	Large stones, too sandy.
Cajon	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.
111 Gila	Moderate: seepage.	Severe: piping, excess salt.	Severe: no water.	Floods	Piping	Piping.
112*:						
Gila	Moderate: seepage.	Severe: piping, excess salt.	Severe: salty water, cutbanks cave.	Deep to water	Erodes easily, floods, excess salt.	Erodes easily.
Playas.						
113*:						
Gothard Variant	Slight	Severe: excess salt.	Severe: no water.	Deep to water	Droughty, percs slowly, erodes easily.	Erodes easily, percs slowly.
Badland.						
114*:						
Knob Hill	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy.
Blackmount	Severe: seepage.	Severe: seepage, excess salt.	Severe: no water.	Deep to water	Droughty, slope, excess salt.	Too sandy.
115, 116 Nickel	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, slope.	Slope, small stones.
117, 118 Nickel	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
119*:						
Nickel	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, slope.	Slope, small stones.
Arizo	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, droughty, fast intake.	Large stones, too sandy.
120*:						
Nickel	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, slope.	Slope, small stones.
Bitter	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, droughty, slope.	Slope, large stones, too sandy.
121*:						
Nickel	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, slope.	Slope, small stones.
Grapevine	Severe: seepage.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Droughty, excess salt.	Favorable.

See footnote at end of table.

TABLE P.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions
122*: Rock outcrop.						
Tecopa	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
St. Thomas	Severe: depth to rock, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Large stones, droughty, depth to rock.	Depth to rock, slope.
123*: Rock outcrop.						
St. Thomas	Severe: depth to rock, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Large stones, droughty, depth to rock.	Depth to rock, slope.
124*: Rock outcrop.						
Virgin Peak	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
Typic haplustolls.						
125*: Tecopa	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.
Rock outcrop.						
126*: Theriot	Severe: depth to rock.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Large stones, droughty, depth to rock.	Large stones, depth to rock.
Rock outcrop.						

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS

[The symbol < means less than; > means more than. Absence of an entry indicates that trees generally do not grow to the given height on that soil]

Soil name and map symbol	Trees having predicted 20-year average heights, in feet, of--				
	<8	8-15	16-25	26-35	>35
100, 101 Arizo	Cotoneaster	Big saltbush, oleander, tamarisk.	---	Russian mulberry	Narrowleaf cottonwood, Athel, Arizona cypress, robusta eucalyptus.
102 Arizo	Big saltbush, cotoneaster.	Tamarisk	---	Athel, narrowleaf cottonwood, Russian mulberry, Arizona cypress.	---
103 Arizo	Cotoneaster	Big saltbush, oleander, tamarisk.	---	Russian mulberry	Narrowleaf cottonwood, Athel, Arizona cypress, robusta eucalyptus.
104*. Badland					
105*:					
Bitter	---	Oleander	---	Russian-olive, Arizona cypress.	Allepo pine.
Arizo	Cotoneaster	Big saltbush, oleander, tamarisk.	---	Russian mulberry	Narrowleaf cottonwood, Athel, Arizona cypress, robusta eucalyptus.
Nickel.					
106*:					
Bitter	---	Oleander	---	Russian-olive, Arizona cypress.	Allepo pine.
Cave.					
Nickel.					
107*:					
Blackmount	Cotoneaster	Tamarisk	---	Athel, narrowleaf cottonwood, Russian mulberry, Arizona cypress.	---
Arizo	Cotoneaster	Big saltbush, oleander, tamarisk.	---	Russian mulberry	Narrowleaf cottonwood, Athel, Arizona cypress, robusta eucalyptus.
108*:					
Blackmount	Cotoneaster	Tamarisk	---	Athel, narrowleaf cottonwood, Russian mulberry, Arizona cypress.	---
Nickel.					
109*:					
Bluepoint	---	Oleander	Athel	Arizona cypress	Lombardy poplar.

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average heights, in feet, of--				
	<8	8-15	16-25	26-35	>35
109*:					
Arizo	Cotoneaster	Big saltbush, oleander, tamarisk.	---	Russian mulberry	Narrowleaf cottonwood, Athel, Arizona cypress, robusta eucalyptus.
110*:					
Sleepoint	---	Oleander	Athel	Arizona cypress	Lombardy poplar.
Arizo	Cotoneaster	Big saltbush, oleander, tamarisk.	---	Russian mulberry	Narrowleaf cottonwood, Athel, Arizona cypress, robusta eucalyptus.
Cajon.					
111.					
Gila					
112*:					
Gila.					
Playa.					
113*:					
Gothard Variant	---	Oleander	---	Arizona cypress, Russian-olive.	Allepo pine.
Badland.					
114*:					
Taob Hill	Big saltbush, cotoneaster.	Oleander	---	Russian-olive, Arizona cypress.	Allepo pine.
Blackmount	Cotoneaster	Tamarisk	---	Athel, narrowleaf cottonwood, Russian mulberry, Arizona cypress.	---
115, 116, 117, 118.					
Nickel					
119*:					
Nickel.					
Arizo	Cotoneaster	Big saltbush, oleander, tamarisk.	---	Russian mulberry	Narrowleaf cottonwood, Athel, Arizona cypress, robusta eucalyptus.
120*:					
Nickel.					
Bitter	---	Oleander	---	Russian-olive, Arizona cypress.	Allepo pine.
121*:					
Nickel.					
Grapevine.					
122*:					
Rock outcrop.					
Tecopa.					

See footnote at end of table.

TABLE 8.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average heights, in feet, of--				
	<8	8-15	16-25	26-35	>35
122*: St. Thomas.					
123*: Rock outcrop.					
St. Thomas.					
124*: Rock outcrop.					
Virgin Peak.					
Typic Haplustolls.					
125*: Tecopa.					
Rock outcrop.					
126*: Theriot.					
Rock outcrop.					

* See description of the map unit for composition and behavior characteristics of the map unit.

Range Sites and Vegetation Communities

DESCRIPTIONS OF RANGE SITES

A. GENERAL

The following are narrative range site descriptions adopted from adjacent areas (especially Nevada). The descriptions include major vegetation compositions and life form breakdowns by major species accompanied by annual production ranges, (where available) and other characteristics known or attributable to this area.

Soil map units found in each site are listed with their known range in elevation.

B. PHYSICAL CHARACTERISTICS

Physiographic Features

The study area includes sites on all exposures on plains, valleys, broad fans, and footslopes with a slope range of 1-50%, usually 2-15%.

Elevation considered for these range sites vary from 1800-4000 feet.

Climatic Features

The climate of the area is hot and dry. Mean annual precipitation is 3.7-6 inches. Mean annual temperature is 57 degrees to 68 degrees Fahrenheit with extremes of 0 to 125 degrees Farenheit. Frost free periods range from 275 to 350 days. Monthly averages show two peak moisture periods - winter and mid to late summer. Rainfall is highly erratic, and wide fluctuations from the average pattern and amount are common. High evaporation reduces effectiveness of summer showers.

C. MAJOR USES AND INTERPRETATIONS

Grazing

This study area has been used in the past for yearlong cattle use. Sheep are sometimes wintered on it. Due to limited rainfall and total production, most of the study area has limited use by domestic livestock. When used the area must be carefully managed to prevent long-term environmental damage due to overgrazing in below normal precipitation. Annuals can be grazed for four to eight weeks in spring following good winter precipitation. The area should be restricted to wildlife use or recreation in most instances. Ideally, grazing may be deferred and site used primarily for winter grazing.

Wood Products

There are no wood products available in the area.

Wildlife

The main wildlife is small desert mammals, birds, lizards and other reptiles. Upland game species may include Gambel quail, morning dove and desert Cottontail, but the potential is limited.

Recreation and Natural Beauty

However, the area has value for open speces and sun seekers, and those interested in desert ecology. It is also attractive to off-road vehicle enthusiasts, which may conflict with ecology interests.

Other

The study area has very limited potential for urban use even if life support systems are provided. Very stony soils and soils with caliche hardpans may inhibit some uses or cause engineering complications. None is suitable for farming.

ARID LIMY COLLUVIAL - ALLUVIAL SITE

Native Vegetation

This is a shrub site with creosotebush and white bursage. Annuals are very common in good moisture years. Shrubs make up about 65%, grasses 15% and forbs 20% of the cover.

Shrubs	Forbs	Grasses	Annuals
Creosotebush	Erogonum	Big galleta	Plantain
White bursage	Plantain	Indian ricegrass	Filaree*
Mormon tea	Wild buckwheat	Desert needlegrass	Ephemerals*
Spiney horse-bush	Cassia (sp) (greenstem)	Stipa (sp)	Chorizanthe*
Yucca (Joshua tree Spanish bayonet)	Desert primrose	6-wks grama	
Blackbrush	Cheeseweed	Windmill grass*	
Catclaw (few)	Atriplex	Bush muhly*	
Desert holly	Compositea		
cacti (cholla prickly pear barrel)			

*Species marked with asterisk were not seen by survey and inspection groups but are listed for the corresponding Nevada range site "Arid Limy Uplands."

Ground cover of perennial plants may be 10-20%, filaree may be a common invader.

Total annual production of usable herbage may be 75-375 pounds in unfavorable to favorable years. (Nevada data).

Soils

Soils are commonly on gently to very strongly sloping, dissected fans, terraces and floodplains including numerous washes arising from adjacent hills and mountains. These are mixed generally coarse loamy soils with desert pavement in places. Textures range from sandy loams to loamy sands with variable content of gravel, cobble and stone. The subsoils are commonly gravelly or cobbly sandy loams and loamy sands with a high content of lime and in places petro-calcic horizons occur. Lime coatings on gravels and cobbles is common. The soils are generally deep and well drained to excessively drained. They are dissected by numerous dry washes which have larger pebbles and cobble and stone in the higher, steeper stream courses.

The soil taxonomic map units included in this range site are:

No. SERIES, TYPE, PHASE	SLOPE RANGE
Bitter very gravelly sandy loam	2-8 percent
Cave gravelly sandy loam	2-5 percent
Nickel very gravelly sandy loam	2-8 percent

ARID LIMY HILL SITE

Native Vegetation

This is a shrub site with creosotebush, white bursage and blackbrush dominant. Annuals are common in years of high rainfall. Shrubs will make up to 60 percent, grasses 10-25% and forbs 15-30% of the cover.

Shrubs	Forbs	Grasses	Annuals
Creosotebush	Eriogonum	Big galleta	Needle grama*
White bursage	Plantain	Indian ricegrass	6-wks grama*
Blackbrush	Penstemon*	Desert needlegrass	Eriogonum
Yucca	Princes plume*	Black grama	Filaree*
Cacti	Globe mallow*	Bush muhly*	Indian wheat*
Mormon tea		Blue grama*	
Ephedra		Fluffgrass*	
Dalea*		Slim tridens*	
White brittlebrush*		Hairy tridens*	
Catclaw*			
Mesquite*			

*Species not recorded by the survey and inspection groups but listed in the corresponding Nevada range site writeup.

Total annual Production

Annual herbage production for the Nevada counterpart of this site lists 50 to 240 pounds in unfavorable to favorable years with an average of 120 to 140 pounds per acre. The production potential for the Kingston-Amargosa area is yet to be determined.

Soils

No. SERIES, TYPES, PHASES, etc.	SLOPE RANGE
[illegible]pa very gravelly sandy loam	15-60 percent
[illegible] Thomas very gravelly fine sandy loam	15-60 percent

ARID, SANDY, LIMY FANS

Native Vegetation

This is a shrub site with creosotebush, white bursage, and lesser amounts of blackbrush, yucca and cacti. Annual plants are abundant in years of high rainfall. Shrubs will make up 60-70%, grasses 10-15% and forbs 15-25% of the cover.

Shrubs	Forbs	Grasses	Annuals
Creosotebush	Buckwheat	Indian ricegrass	Filaree*
White bursage	Plantain	Big galleta	Indian wheat*
Blackbrush	Globe mallow*	Desert needlegrass	
Cacti		Stipas (sp)	
Yucca		Black muhly*	
Ephedra*		Sixweeks grama*	
Mormon Tea		Sand dropseed*	
Spiny Horsebush			

*Species not seen by the survey and inspection groups but listed in the Nevada range site writeup.

Soils

No. SERIES, TYPE, PHASE, etc.	SLOPE RANGES
Bluepoint loamy sand	0-2 percent
Cajon loamy sand	0-2 percent

DRY SEDIMENTARY WASH RANGE SITE

Native Vegetation

This is a shrub site with sparse grass-forb understory. It does not have a true climax vegetation as the soils are being continually reworked by floods.

Shrubs	Forbs	Grasses	Annuals
Creosotebush	Eriogonum	Big galleta	Filaree*
White bursage	Buckwheat	Indian ricegrass	Indian wheat*
Catclaw	Atriplex	Black grama	Sixweeks grama
Yucca	Ephedra	Alkali sacaton*	Needle grama*
Cacti			
Mormon Tea			
Blackbrush			
Desert willow*			
Baccharis*			
Fremont dalea*			
Cheeseweed			
Mesquite*			
Paperbagbrush*			

*Species not recorded by the survey and inspection groups but listed in the corresponding Nevada site writeup.

Total Annual Production

Annual herbage for the Nevada counterpart is listed as 50 to 400 pounds in unfavorable to favorable years and 100 to 200 pounds in normal or average years. The production potential for the Kingston-Amargosa area has not yet been determined.

Soils

No. SERIES, TYPES, PHASES, etc.	SLOPE RANGES
Arizo gravelly loamy sand	0-2 percent

SEDIMENTARY SALINE FANS AND FLOOD PLAINS

Native Vegetation

This is a shrub site in which the accumulation of salts has altered the vegetative community toward more tolerant species. Some annuals may grow well in years of higher rainfall. Shrubs may make up to 60% of the cover, grasses 10-25% and forbs 15-30%. Alterations of the soil salt content may vary from year to year as affected by rainfall and flooding.

Shrubs	Forbs	Grasses	Annuals
4-wing saltbush	Alkali seepweed*	Inland saltgrass	Annual grasses*
Shadscale	Desert trumpet	Alkali sacaton*	
Desert Holly	Plantain		Russian thistle
Creosotebush	Kochia		Kochia
White bursage			Indian wheat
Greasewood*			
Torreys saltbush*			
Mesquite			

*Species not recorded by the survey and inspection groups but listed in the corresponding Nevada site writeup.

Total Annual Production

This does not compare directly with a Nevada site and no data is yet available on potential production.

Soils

No. SERIES, TYPES, PHASES, etc.	SLOPE RANGE
Arizo very gravelly loamy sand, saline	0-2 percent
Knob Hill gravelly loamy sand	2-15 percent

SEDIMENTARY SALINE MEADOW SITE

Native Vegetation

This is a grass site with alkali sacaton, inland saltgrass dominant. Grasses and sedges make up to 75-80% of the cover, with forbs and shrubs accounting for 20 to 25% of the cover in places...some parts remain barren.

Shrubs	Forbs	Grasses	Annuals
4-wing saltbush	Alkali seepweed	Inland saltgrass	
Shadescale	Pickleweed	Alkali sacaton*	
Rubber rabbitbrush*	Dock*	Sedges*	
Big saltbrush*			
Cattle saltbrush*			

*Species not recorded by the surveyors and inspection groups but are listed for the Nevada site writeup.

Total Annual Production

There is apparently much less production in the Gila, saline-playa complex than is postulated for the Nevada counterpart of this site. There is no data available at present for estimating production.

Soils

No. SERIES, TYPES, PHASES, etc.	SLOPE RANGE
Gila silt loam, saline-playa complex	flat or depression

SEDIMENTARY SALT FLATS

Native vegetation

This is a shrub site dominated by salt-tolerant species such as fourwing saltbush, shadscale, and alkali seepweed. Scattered Inland saltgrass and Alkali sacaton may be present. Shrubs make up about 70-80% of the cover with grasses and forbs the remainder.

Shrubs	Forbs	Grasses	Annuals
4-wing saltbush	Alkali seepweed	Inland saltgrass	annual weeds
Shadscale	Eriogonum	Alkali sacaton*	annual grasses
Spiny horsebrush	Pickleweed		
Mesquite	Iodinebush		
Desert holly*	Kochia		
Cattle saltbush*	Glasswort*		
Black greasewood*			
Torreys saltbush*			

*Species not recorded by the surveyors and inspection groups but listed for the Nevada site writeup.

Total Annual Production

This is a low producing site if usable at all. Nevada counterpart site estimate is 50 to 300 pounds of annual herbage growth in unfavorable to favorable years. Many areas are barren.

Soils

No. SERIES, TYPES, PHASES, etc.	SLOPE RANGE
Gila salt loam, saline	
Gothard variant-Badland association	

SEMIARID HIGHLAND SLOPES RANGE SITE

Native Vegetation

This is a shrub site with blackbrush and big sage dominant. There are a few scattered juniper on northerly-facing breaks and arroyos. Some grasses, other shrubs and forbs combine to produce a fair ground cover.

Shrubs	Forbs	Grasses	Annuals
Blackbrush	Desert trumpet	Big galleta	Filaree*
Big sagebrush	Snakeweed	Indian ricegrass	Indian wheat
Rabbitbrush	Princes plume*	Black grama	Fiddleneck*
Bitterbrush	Globe mallow*	Stipa (sp)	Sixweeks grama
Yucca		Cheat brome	Needle grama*
Mormon Tea		Bush muhly*	Annual foxtail*
Cholla, pencil cactus		Fluffgrass*	
White bursage		Squirreltail	
Creosotebush (scattered)			
Juniper (localized)			
Ephedra*			
Spiny hopsage*			
White burrobrush*			
Spiny menodora*			
Horsebrush*			

*Species not recorded by the surveyors and inspection groups but listed for the Nevada site writeup.

Total Annual Production

This high, less accessible area is less utilized by animals. Blackbrush may increase on overgrazing. Total annual production for the Nevada counterpart of this site is rated at 125 to 400 pounds per acre in unfavorable to favorable years with 250-300 pounds being average. This site for the Kingston-Amargosa area is yet to be evaluated as to productivity.

Soils

No. SERIES, TYPES, PHASES, etc.	SLOPE RANGE
Theriot very gravelly sandy loam	30-75 percent

PINYON/JUNIPER HIGHLANDS RANGE SITE

Limited Woodland Suitability

Native Vegetation

This is a shrub site with scattered juniper and pinyon pine in more favorable, north-facing breaks, arroyos and canyons. It has very limited uses for woodland products such as posts and is so high and difficult of access that livestock use is limited also. Shrubs make up 60% and low trees make up possibly 10%, with forbs accounting for 15-25% and grasses 10-20% of the ground cover.

Shrubs & Trees	Forbs	Grasses	Annuals
Blackbrush	Buckwheat	Needlegrass	Annual brome
Big sagebrush	Loco*	Cheatgrass	Thistle
Bitterbrush	Thistle*	Indian ricegrass	
Rabbitbrush		Bluegrasses*	
Ephedra		Oniongrass*	
Pinyon pine		Squirreltail*	
Juniper		Gramas*	
Cliff rose			
Mountain mahogany*			
Turbinella oak*			

*Species not recorded by the surveyors and inspection groups but listed for the Nevada site writeup.

Total Annual Production

The Nevada counterpart site lists production as 200 to 525 pounds in unfavorable to favorable years. No data is yet available on the productivity of the Kingston-Amargosa site.

Soils

No. SERIES, TYPES, PHASES, etc.	SLOPE RANGE
Typic haplustolls	30-75 percent
Virgin peak very cobbly sandy loam	30-75 percent

SEDIMENTARY WASHES AND FANS

Native Vegetation

This is a shrub site with creosotebush, redbrome, and white bursage dominant. Shrubs comprise 15 to 20% of the cover and grasses about 25% with forbs, annuals, and cacti making up the remainder.

Shrubs	Forbs	Grasses	Annuals
Creosotebush	Desert Alyesum	Redbrome	Filaree
White bursage		Galleta	
Cacti		Indian ricegrass	
Joshua Tree		Desert Needlegrass	

Total Annual Production

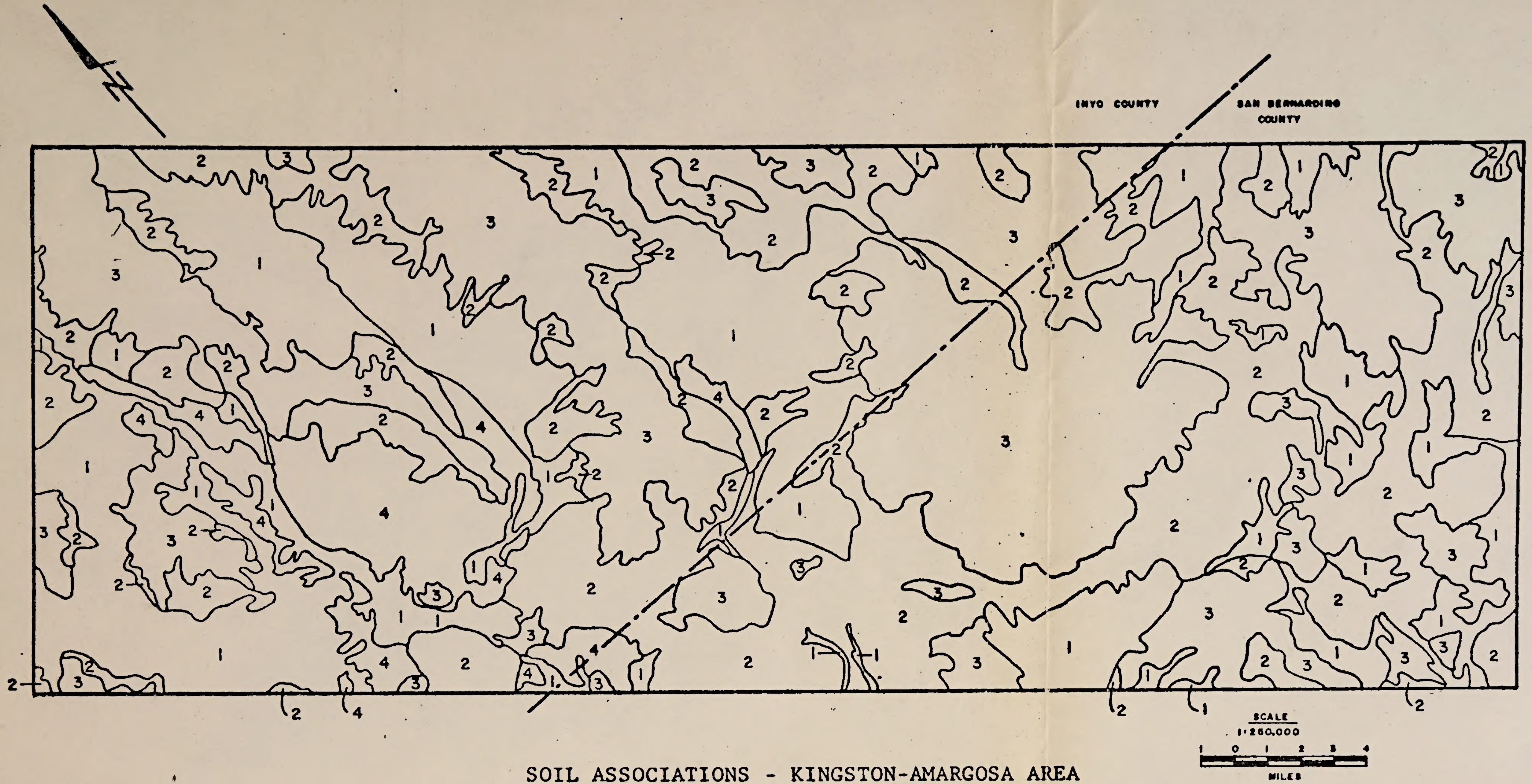
During favorable years production estimates approach 400 lbs/acre while unfavorable to favorable years production runs 100 to 200 lbs/acre, respectively.

Soils

No. SERIES, TYPES, PHASES, etc.	SLOPE RANGE
Arizo very gravelly loamy sand,	2 to 5 percent
Arizo extremely stony loamy sand,	2 to 15 percent
Bitter very gravelly sandy loam	
Blackmount very gravelly sandy loam,	2 to 8 percent
Grapevine gravelly fine sandy loam,	1 to 3 percent

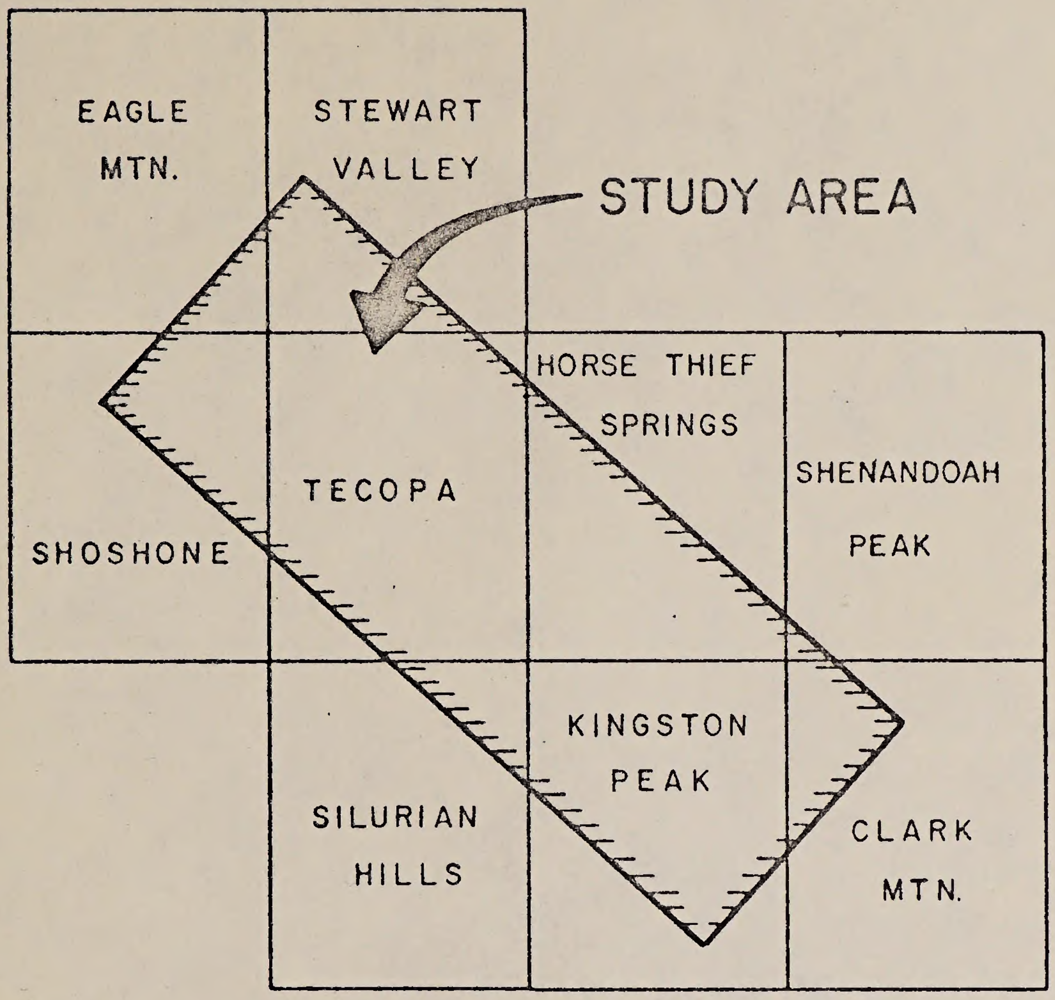
Appendix

Maps



SOIL ASSOCIATIONS - KINGSTON-AMARGOSA AREA

1 Arizo-Gila-Bluepoint Association: Deep, excessively-drained, nearly level to moderately sloping soils on alluvial fans and flood plains.
2 Bitter-Blackmount-Arizo Association: Deep, well-drained, gently to strongly sloping on strongly dissected old alluvial fans and toeslopes.
3 Rock Outcrop-Tecopa-St. Thomas Association: Bare to shallow, steep to very steeply sloping soils on low hills and mountains.
4 Badlands-Gothard Variant Association: Barren soils on steep to very steep land and deep poorly-drained soils on level to nearly level alkali flats.



U.S.G.S. 15 MINUTE SERIES (TOPOGRAPHIC, SCALE 1:62,500)

QUAD INDEX SHEET
for
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DENVER, CO 80225

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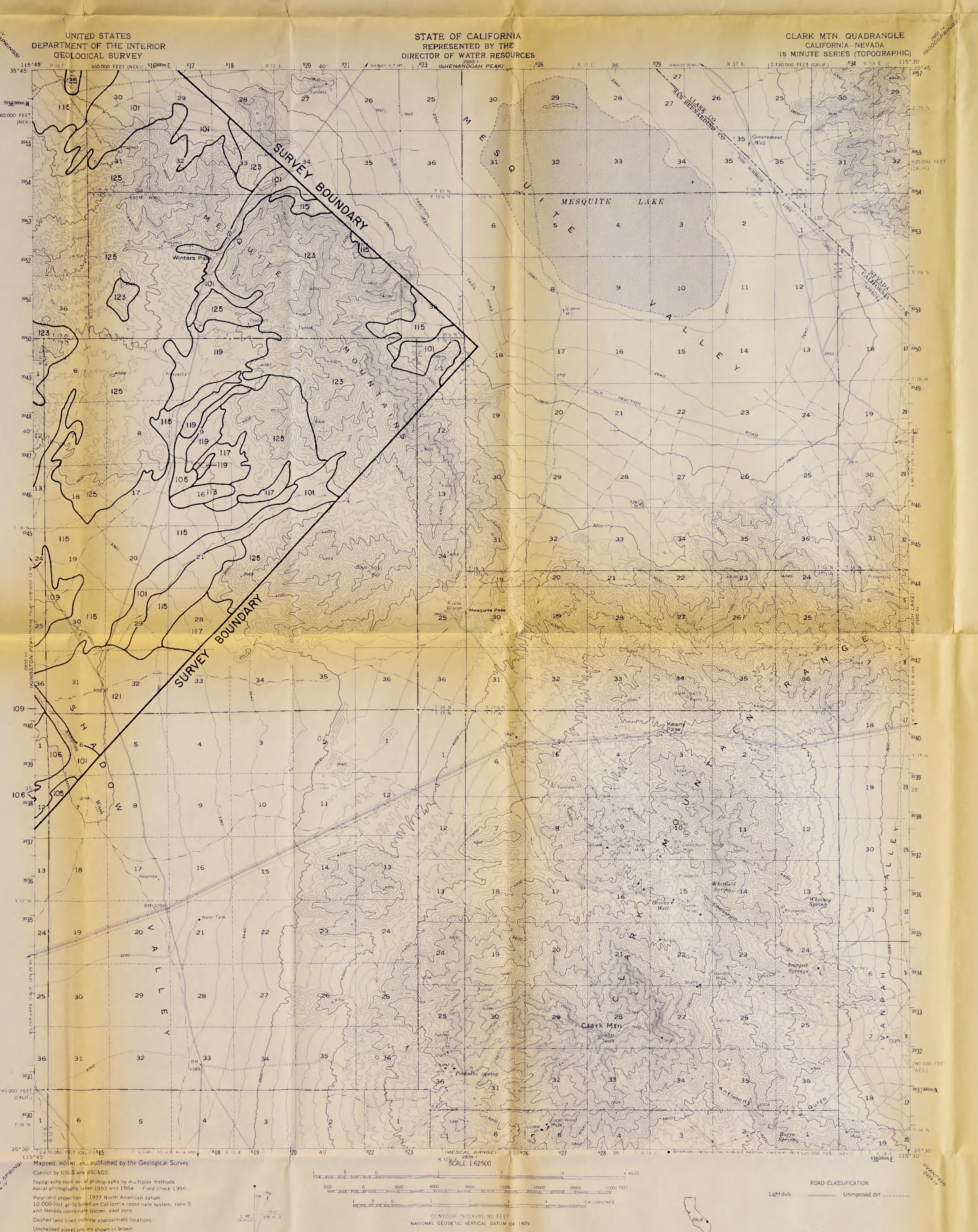
CLARK MTN. QUADRANGLE
CALIFORNIA–NEVADA
15 MINUTE SERIES (TOPOGRAPHIC)



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Topography from aerial photographs by multiplex methods
Aerial photographs taken 1953 and 1954. Field check 1956

Polyconic projection. 1927 North American datum
10,000-foot grids based on California coordinate system, zone 5
and Nevada coordinate system, east zone

Dashed land lines indicate approximate locations

Unchecked elevations are shown in brown

1000-metre Universal Transverse Mercator grid ticks,
zone 11, shown in blue

UTM GRID AND 1956 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:62500

CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

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A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Light-duty ═══ Unimproved dirt - - - - -

CLARK MTN, CALIF.—NEV.
N3530—W11530/15

1956

AMS 2855 II—SERIES V795

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UNITED STATES
DEPARTMENT OF THE INTERIOR
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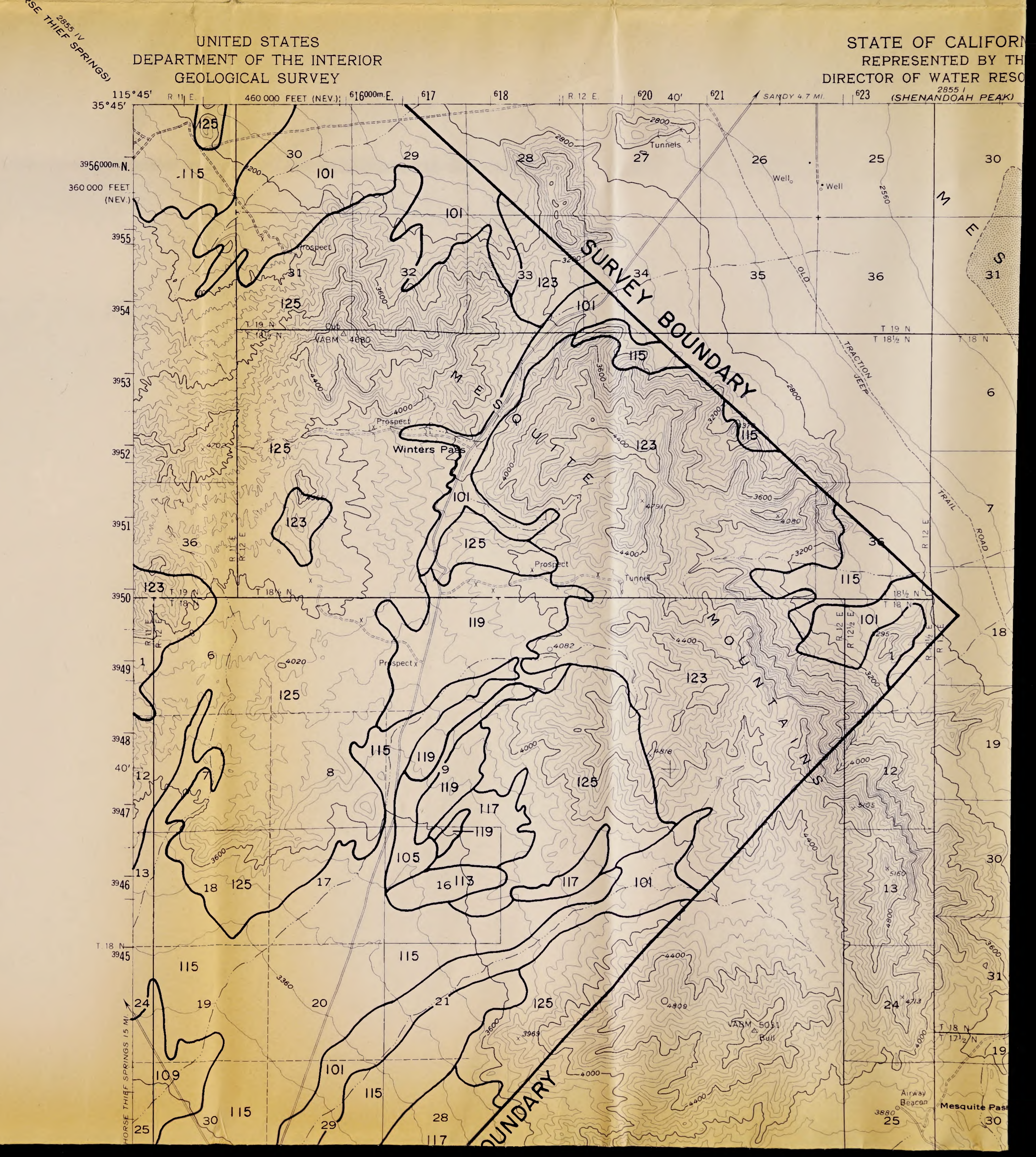

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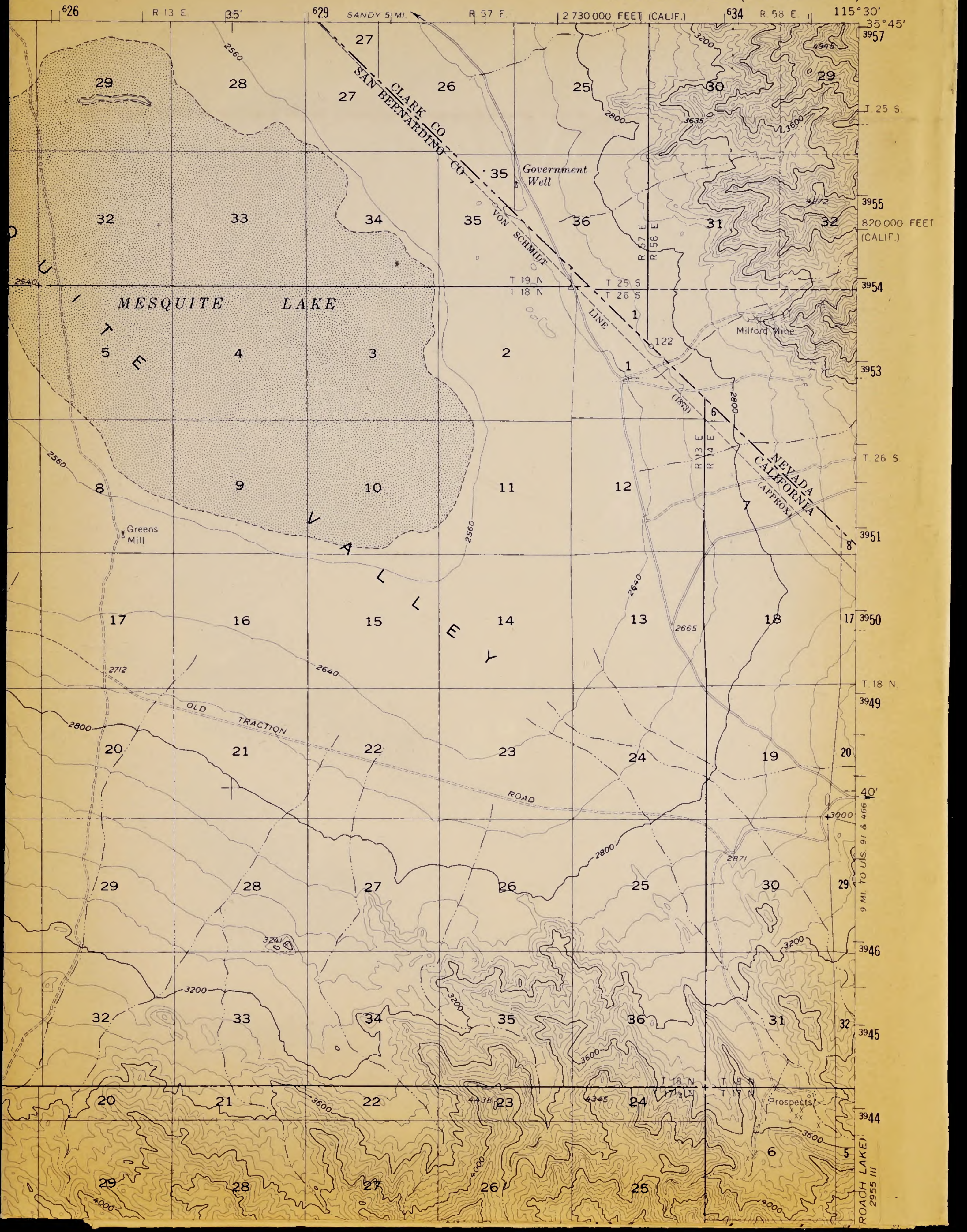
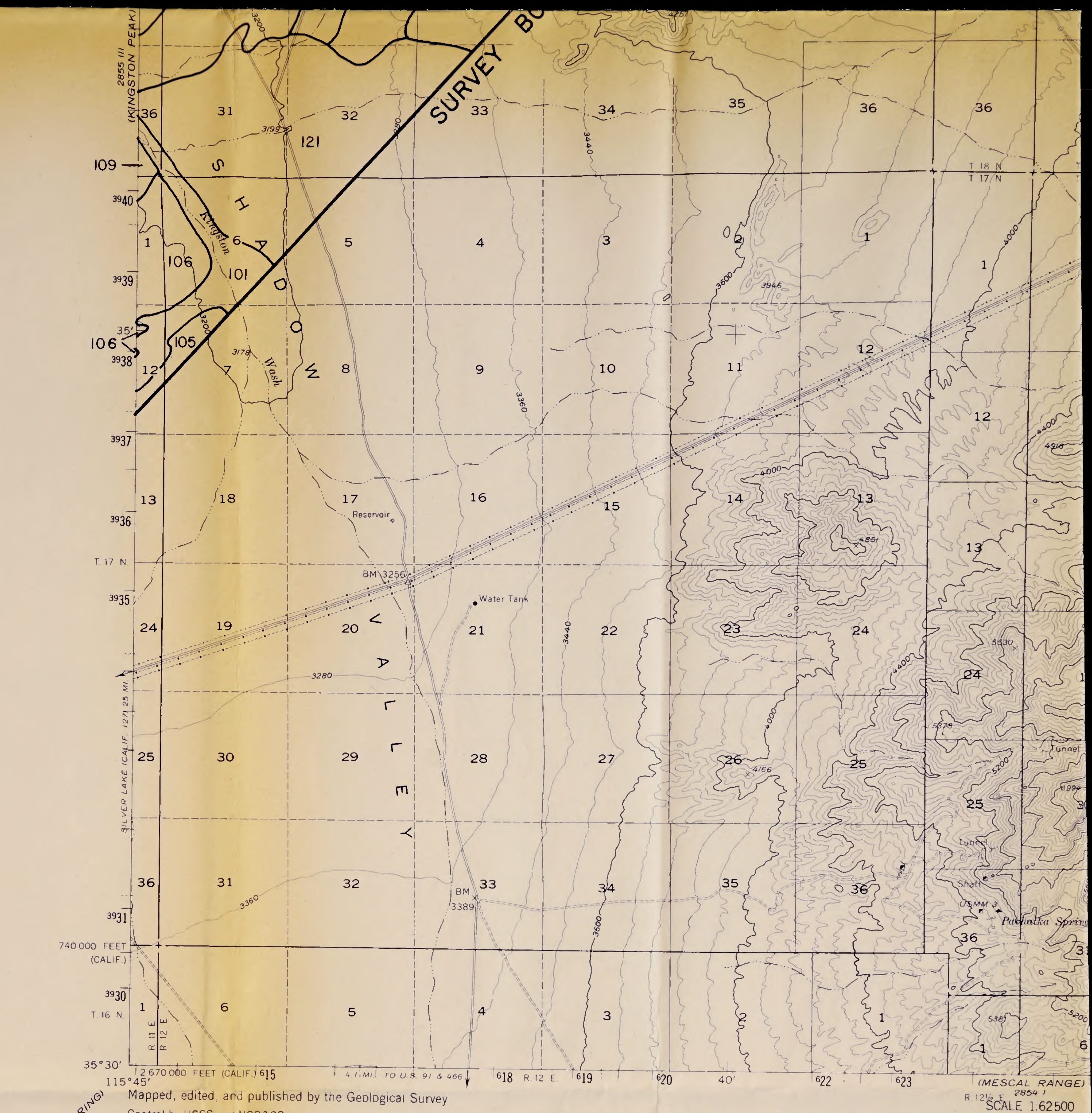
CLARK MTN. QUADRANGLE

CALIFORNIA–NEVADA
15 MINUTE SERIES (TOPOGRAPHIC)





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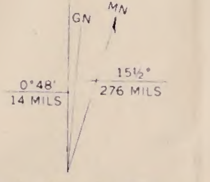
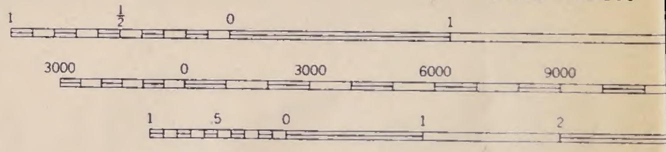


UTM GRID AND 1956 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:62500



CONTOUR INTERVAL 80 F
NATIONAL GEODETIC VERTICAL DATU

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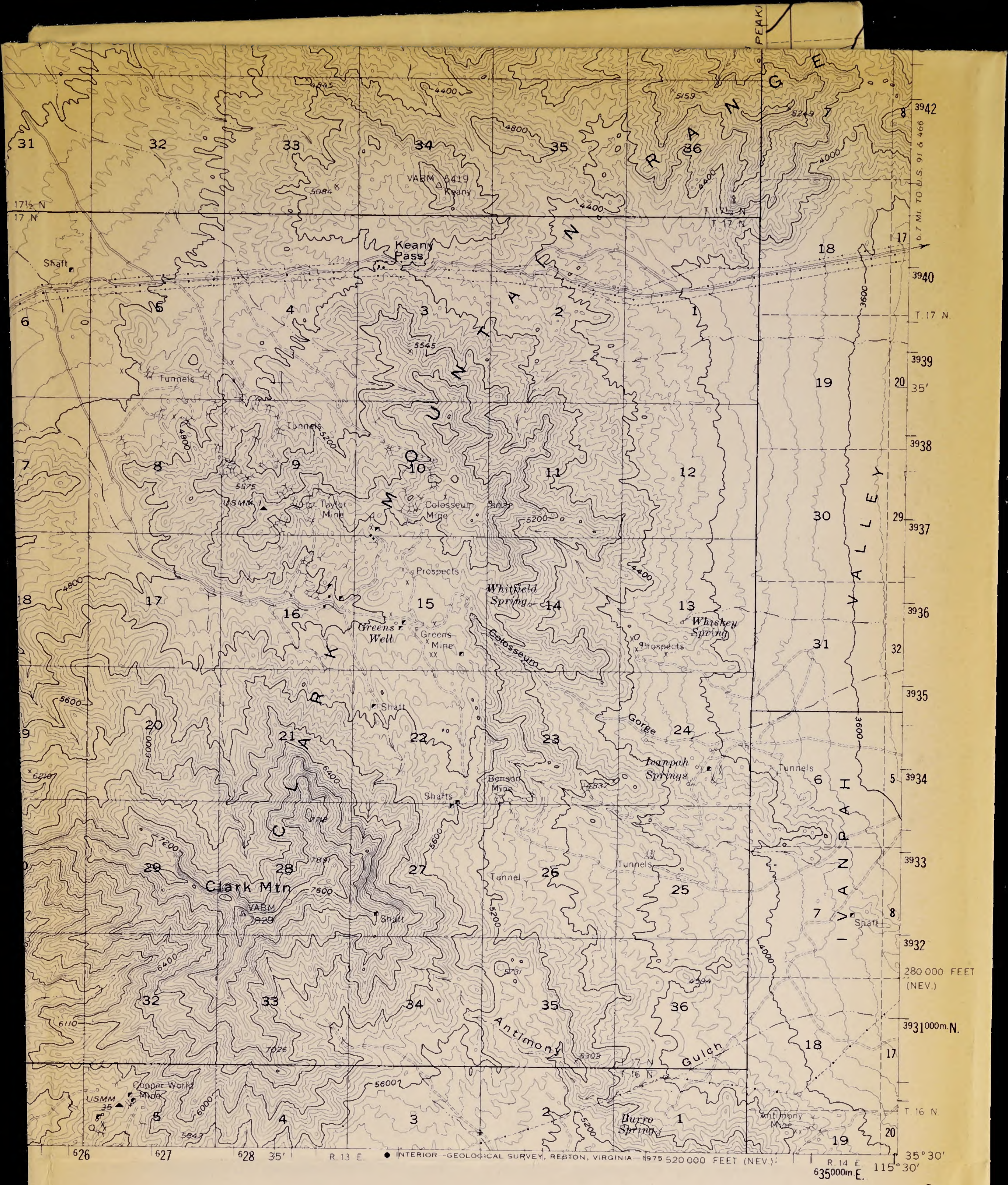

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3 4 5 KILOMETRES

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CURACY STANDARDS

80225, OR RESTON, VIRGINIA 22092

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QUADRANGLE LOCATION

ROAD CLASSIFICATION

Light-duty ══════ Unimproved dirt ══ ══ ══

CLARK MTN, CALIF.—NEV.

N3530—W11530/15

1956

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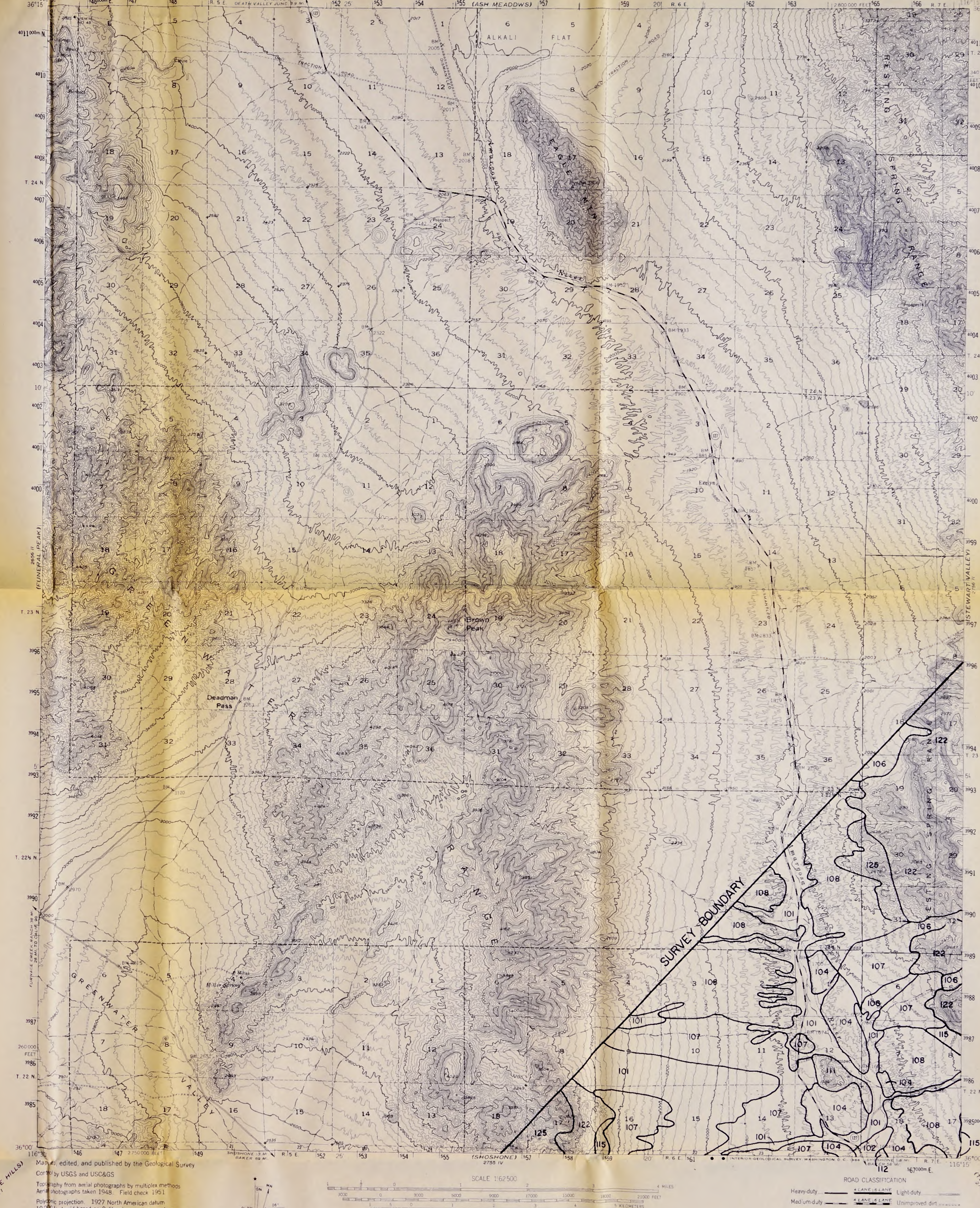

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10,000-foot grid based on California coordinate system, zone 4

Dashed land lines indicate approximate locations

Unchecked elevations are shown in brown

1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue

GN
MN
0° 22'
7 MILS
16°
284 MILS

UTM GRID AND 1951 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:62500

1 ½ 0 1 2 3 4 MILES

3000 0 3000 6000 9000 12000 15000 18000 21000 FEET

1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT HALF-INTERVAL CONTOURS
DATUM IS MEAN SEA LEVEL

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CALIF.
QUADRANGLE LOCATION

ROAD CLASSIFICATION

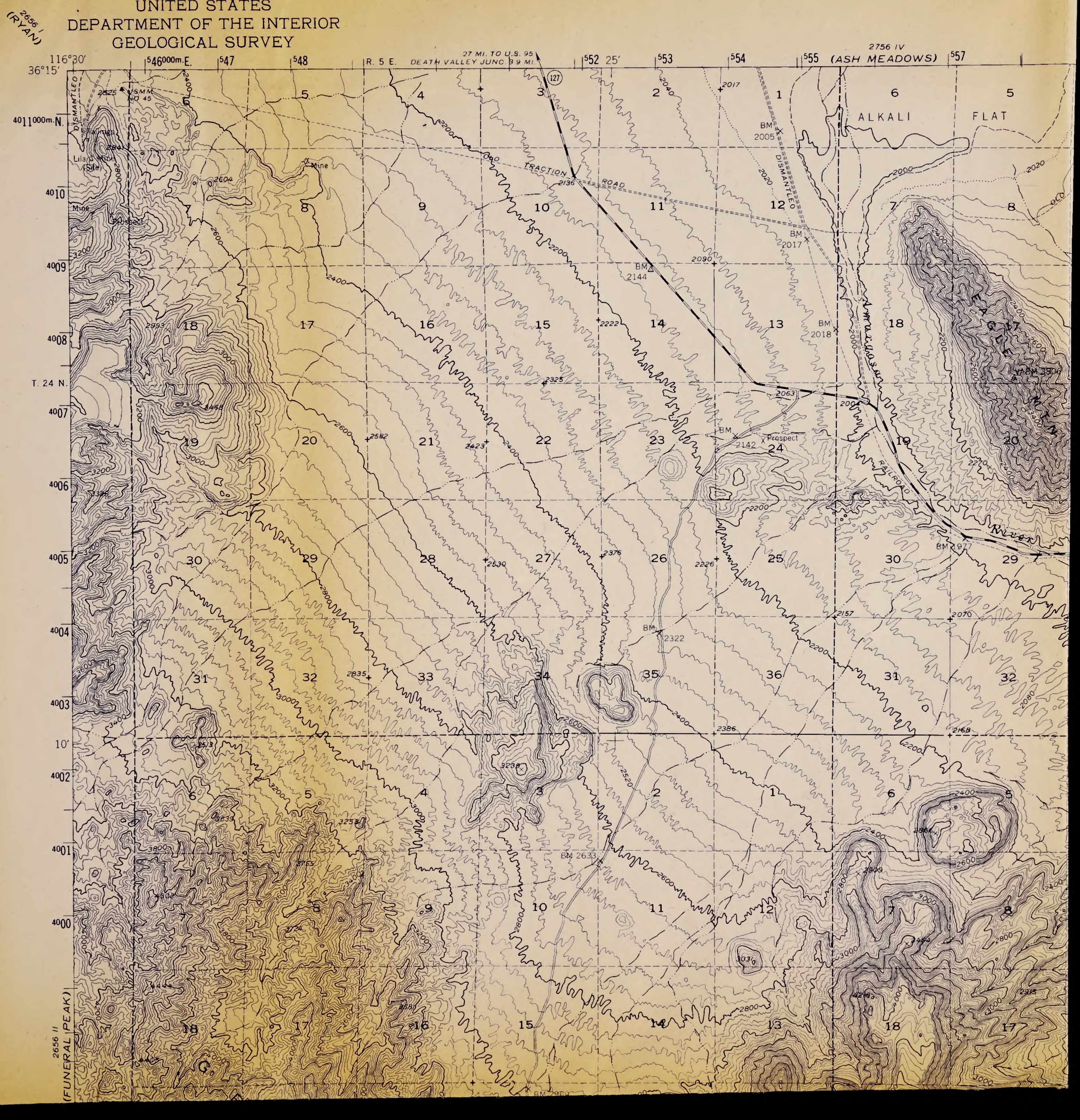
Heavy-duty — 4 LANE | 6 LANE — Light-duty
Medium-duty — 4 LANE | 6 LANE — Unimproved dirt
U. S. Route ○ State Route

SPECIAL PRINTING
Contours and woodland symbols omitted

EAGLE MTN., CALIF.
N3600—W11615/15
1951
AMS 2756 III—SERIES V795

Death Valley
SE 39

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



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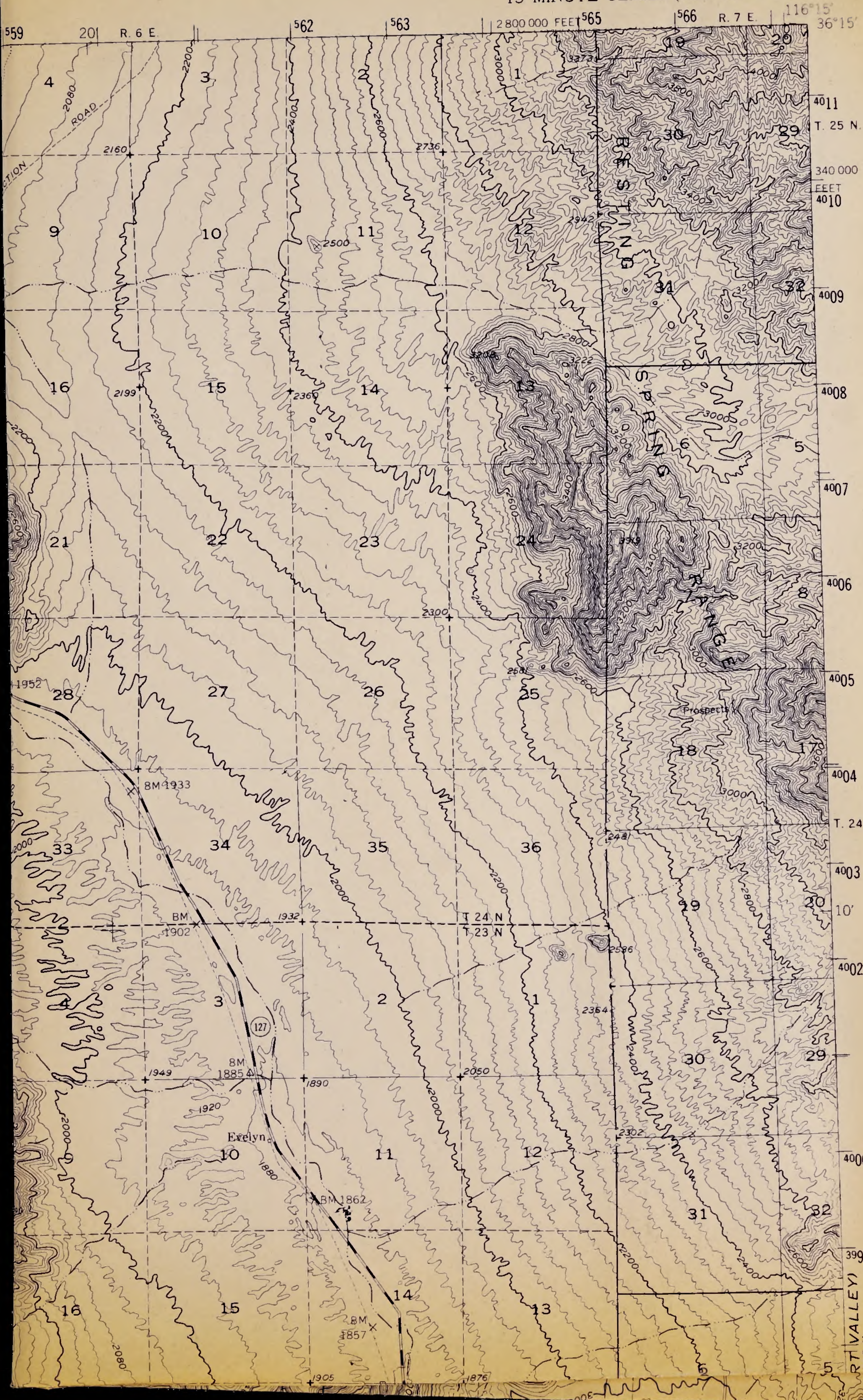
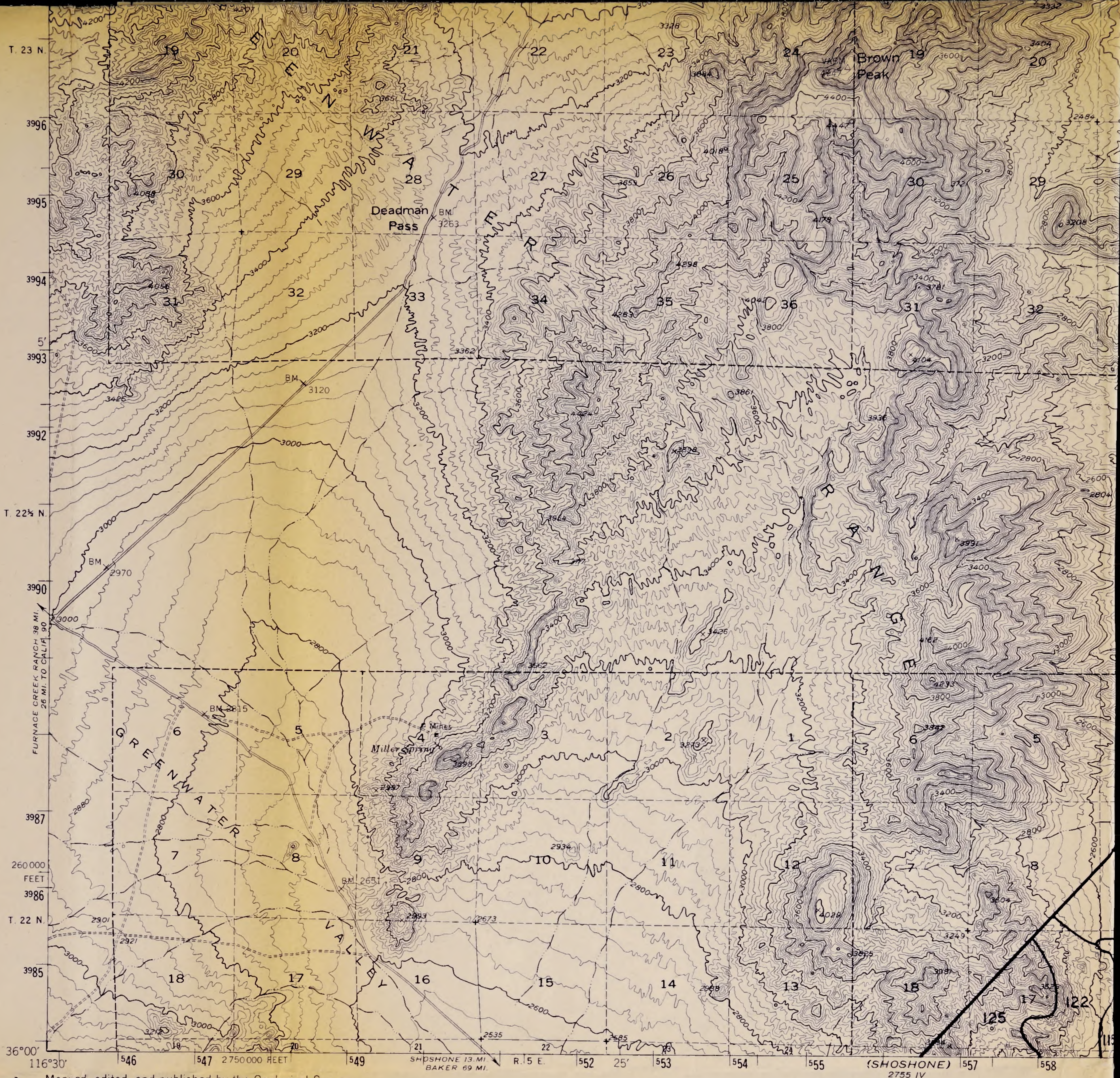
CALIFORNIA-INYO CO.
15 MINUTE SERIES (TOPOGRAPHIC)





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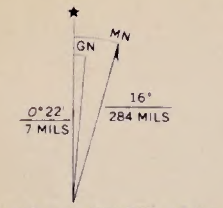
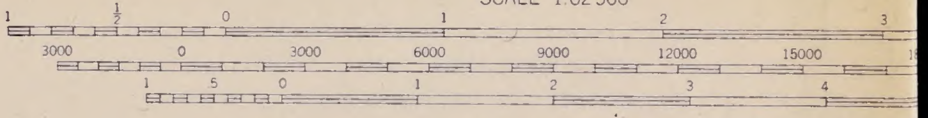


UTM GRID AND 1951 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:62500



CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT HALF-INTERVAL CONTOURS
DATUM IS MEAN SEA LEVEL

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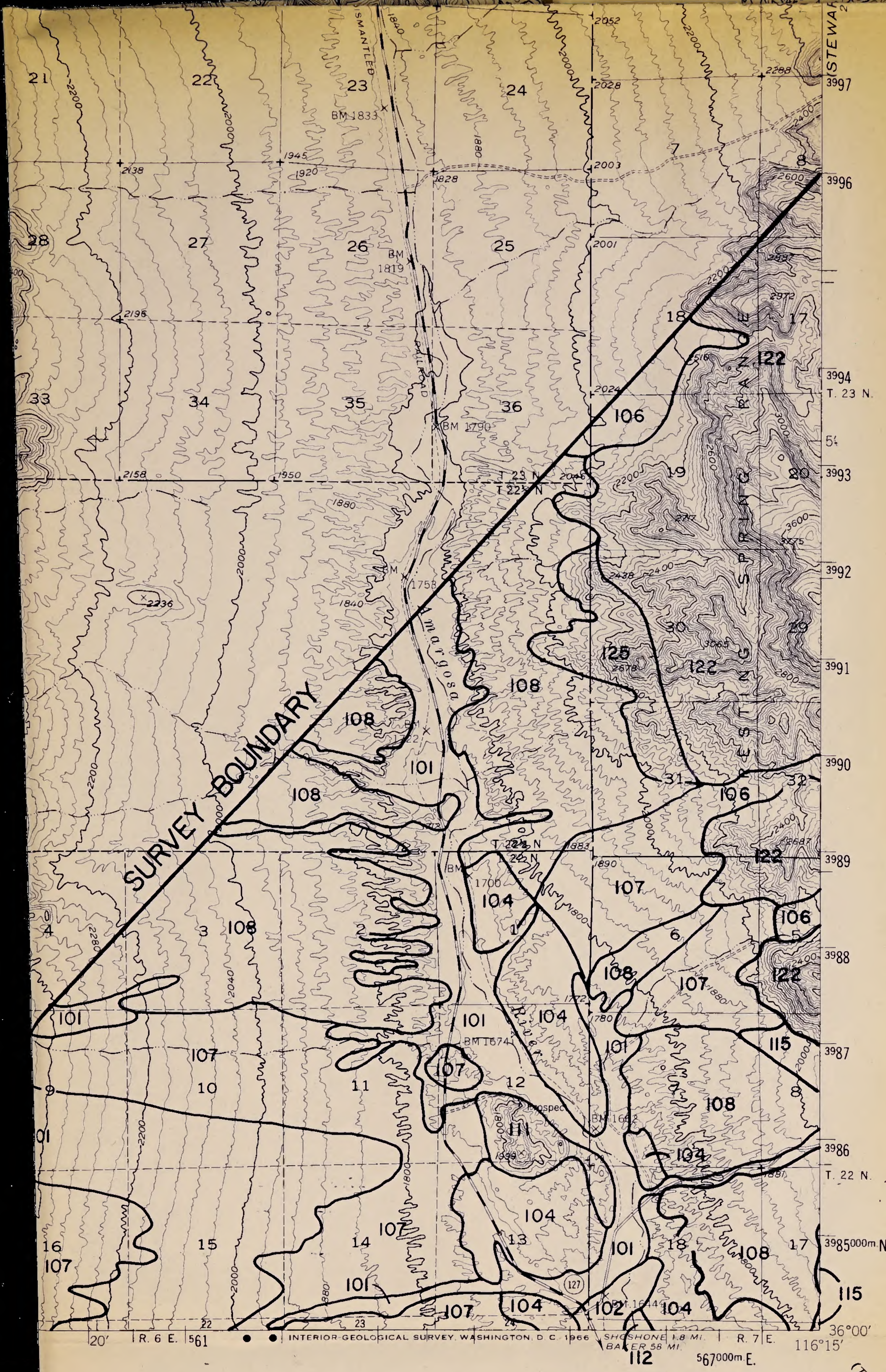

SPECIAL PRINTING
Contours and woodland symbols omitted

(TECOPA)
2755 I

4 MILES
21000 FEET
LOMETERS

ROAD CLASSIFICATION

Heavy-duty 4 LANE | 6 LANE Light-duty
Medium-duty 4 LANE | 6 LANE Unimproved dirt
U. S. Route ○ State Route

QUADRANGLE LOCATION

C. 20242

EAGLE MTN., CALIF.
N3600—W11615/15

1951

AMS 2756 III—SERIES V795

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HORSE THIEF SPRINGS QUADRANGLE
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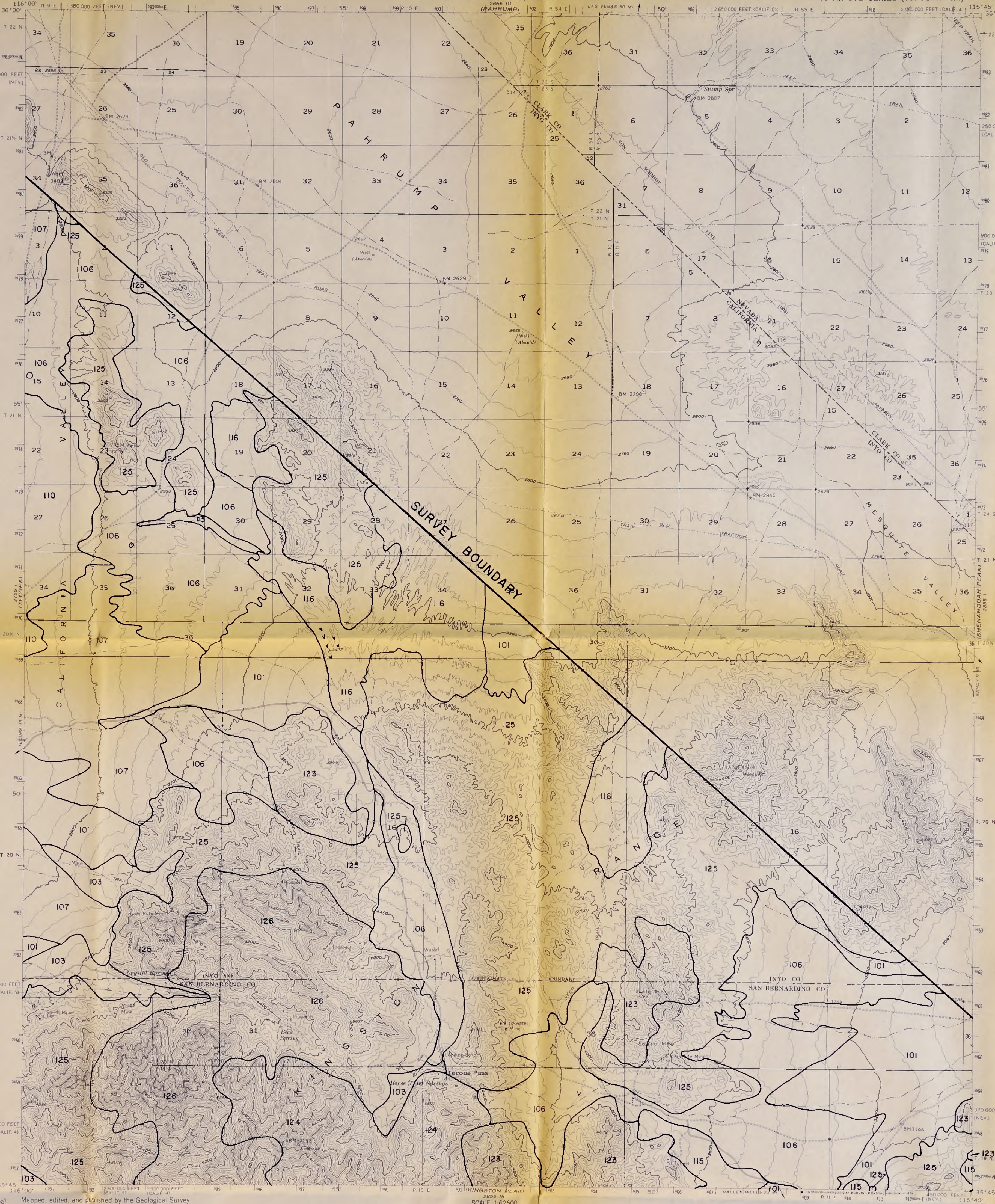

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1000-metre Universal Transverse Mercator grid ticks, zone 11, shown in blue
Dashed land lines indicate approximate locations
Unchecked elevations are shown in brown

UTM GRID AND 1956 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 80 FEET
DASHED LINES REPRESENT 40-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

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N3545—W11545/15

1956

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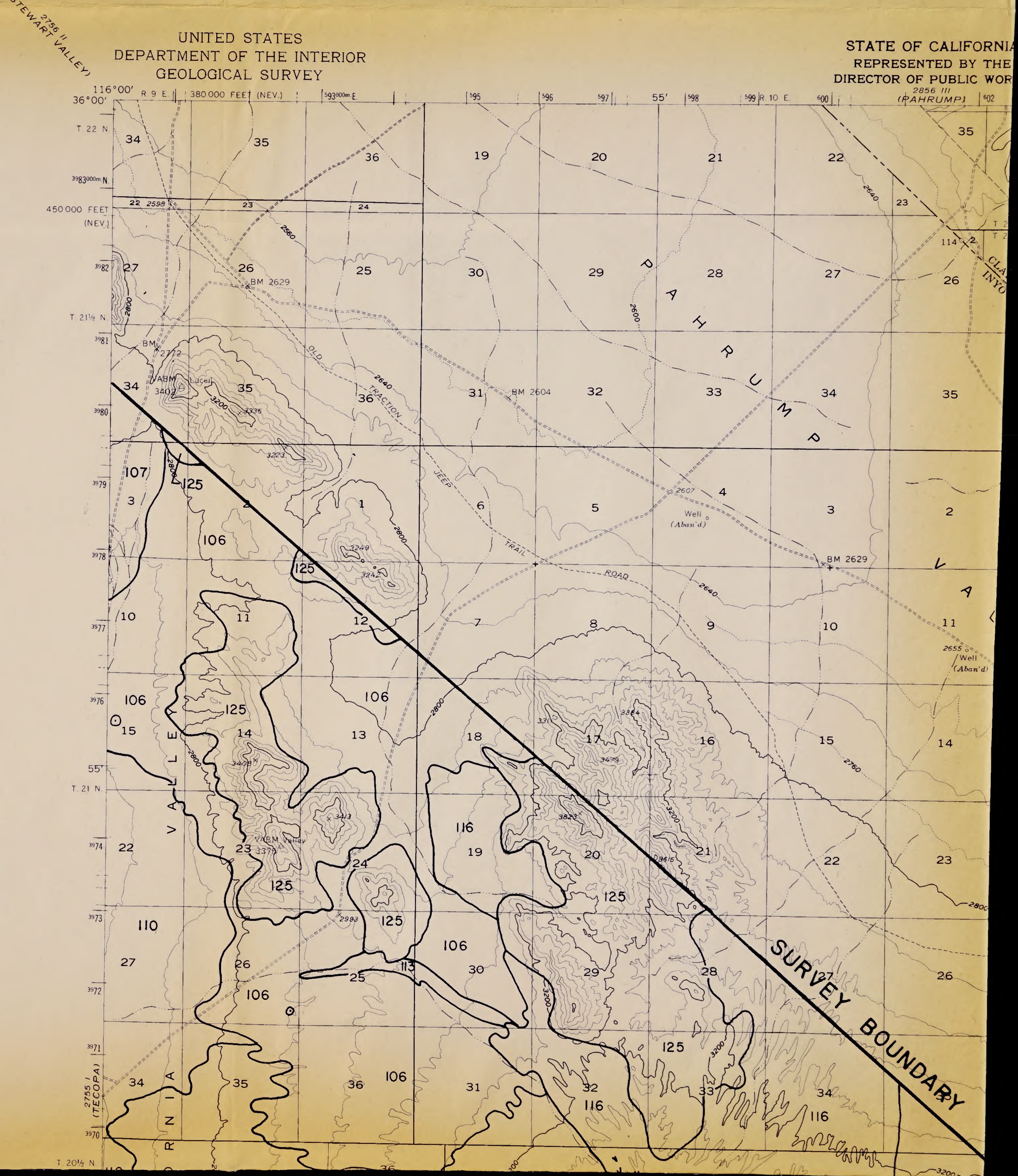
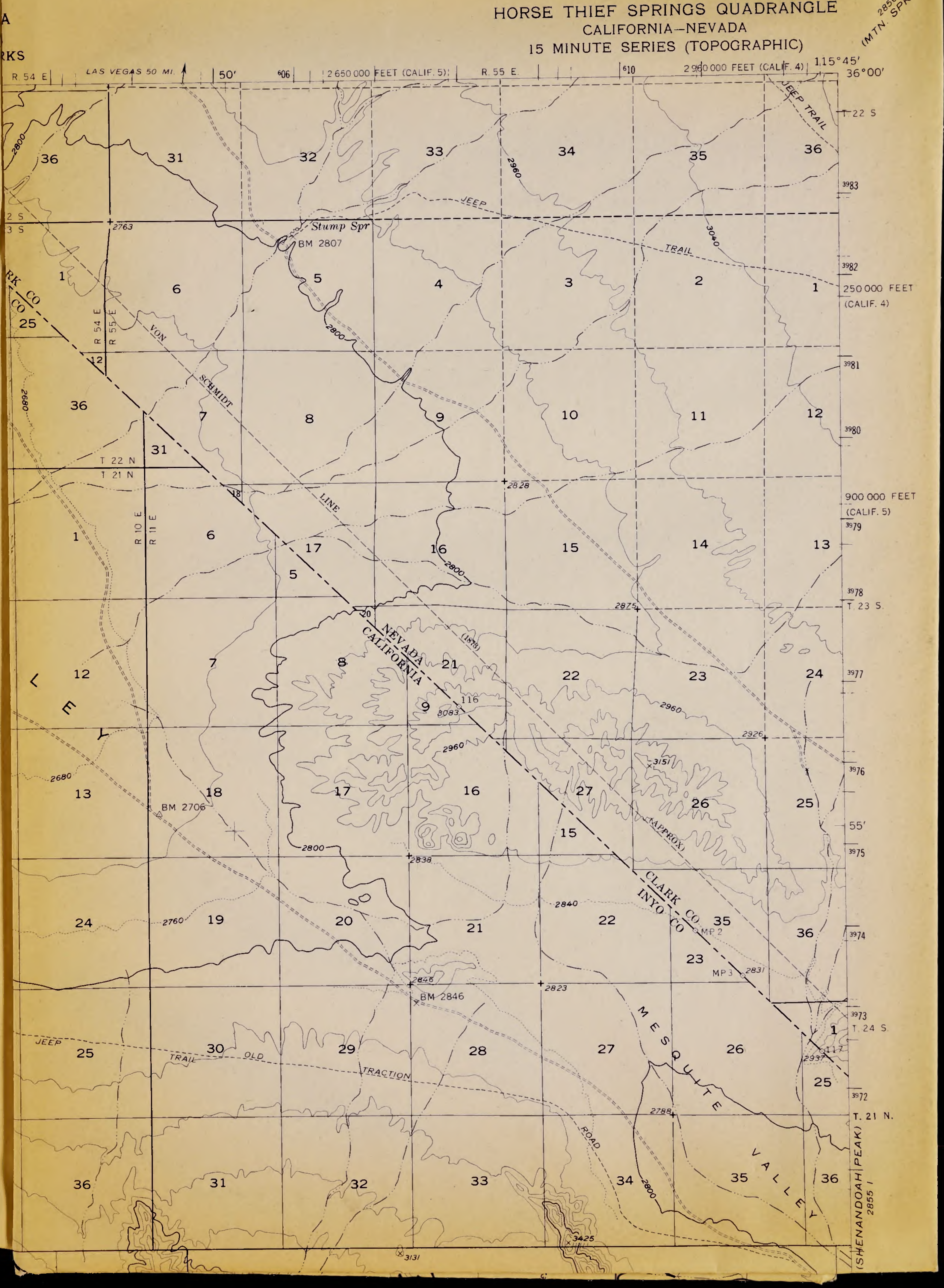
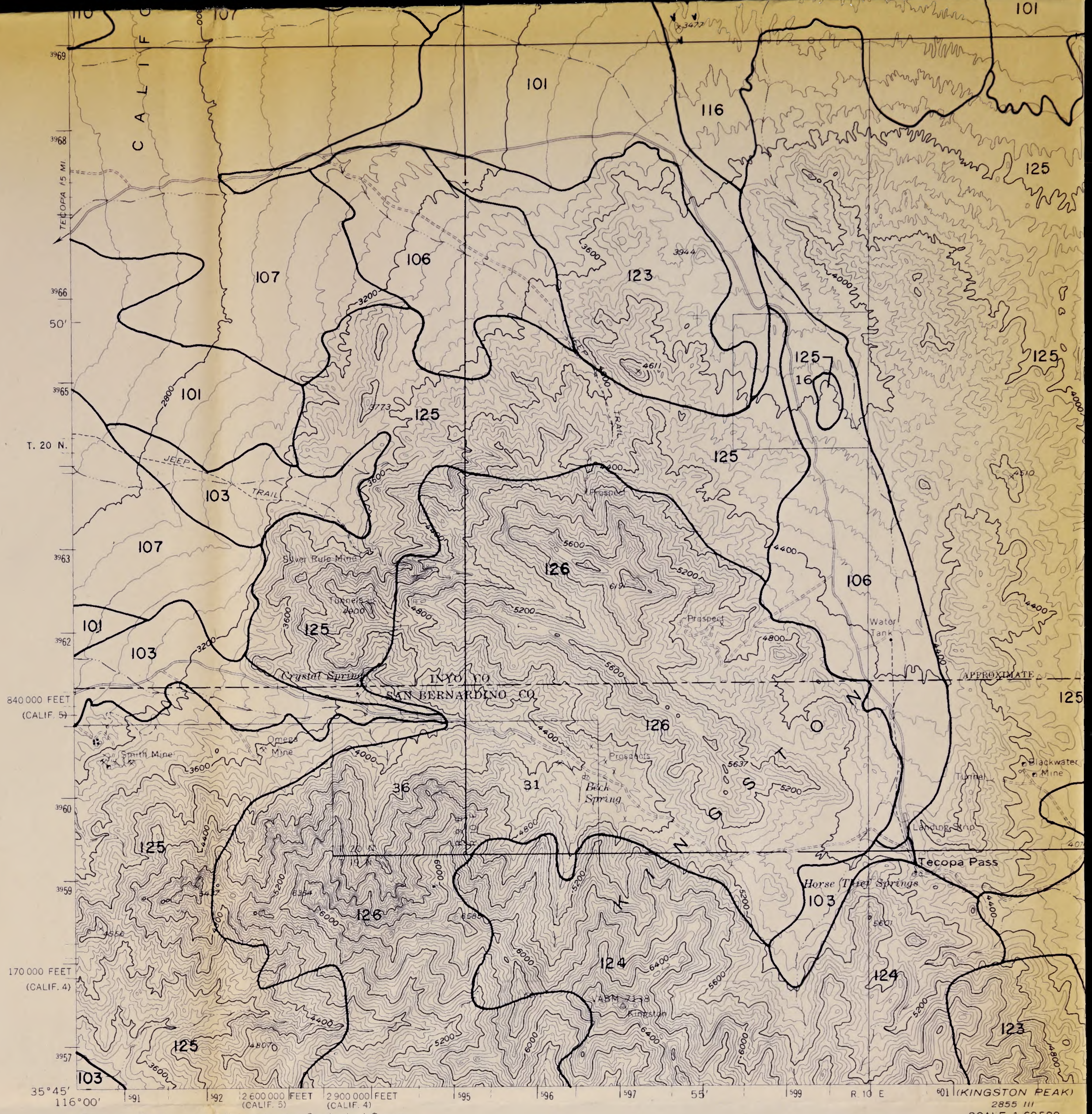


HORSE THIEF SPRINGS QUADRANGLE
CALIFORNIA–NEVADA
15 MINUTE SERIES (TOPOGRAPHIC)





(SILURIAN HILLS)
2755 II

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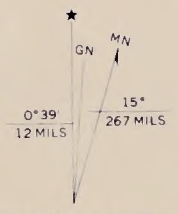
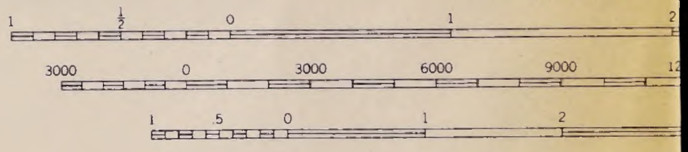


UTM GRID AND 1956 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:62500



CONTOUR INTERVAL 80 FE
DASHED LINES REPRESENT 40-FOOT C
NATIONAL GEODETIC VERTICAL DATU

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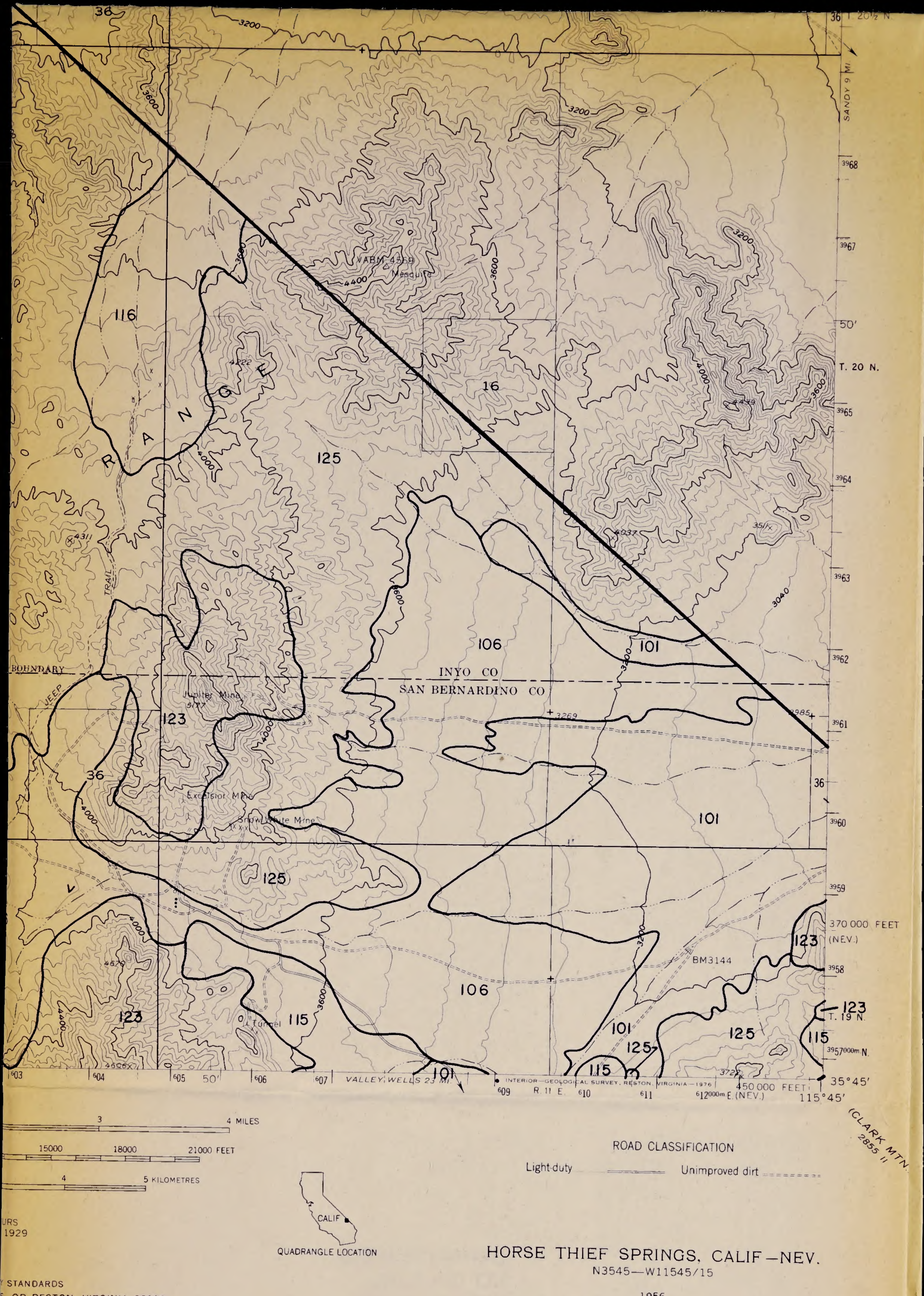

3 4 MILES

15000 18000 21000 FEET

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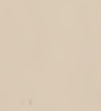
URS
1929

ROAD CLASSIFICATION

Light-duty ——— Unimproved dirt = = = =



QUADRANGLE LOCATION

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HORSE THIEF SPRINGS, CALIF—NEV.
N3545—W11545/15

1956

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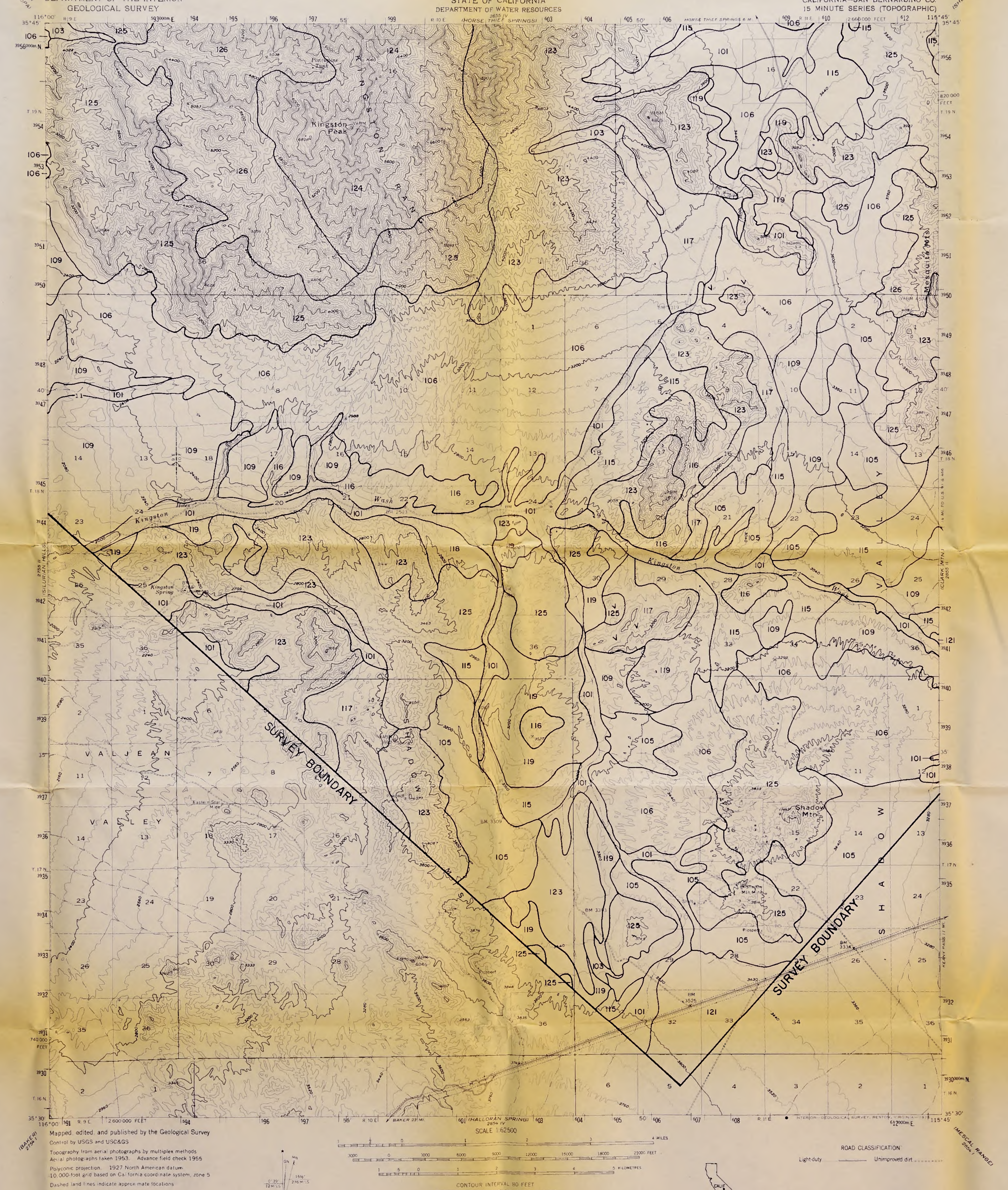
KINGSTON PEAK QUADRANGLE
CALIFORNIA–SAN BERNARDINO CO.
15 MINUTE SERIES (TOPOGRAPHIC)



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zone 11, shown in blue

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KINGSTON PEAK, CALIF.
N3530—W11545/15

1955

AMS 2855 III—SERIES V795

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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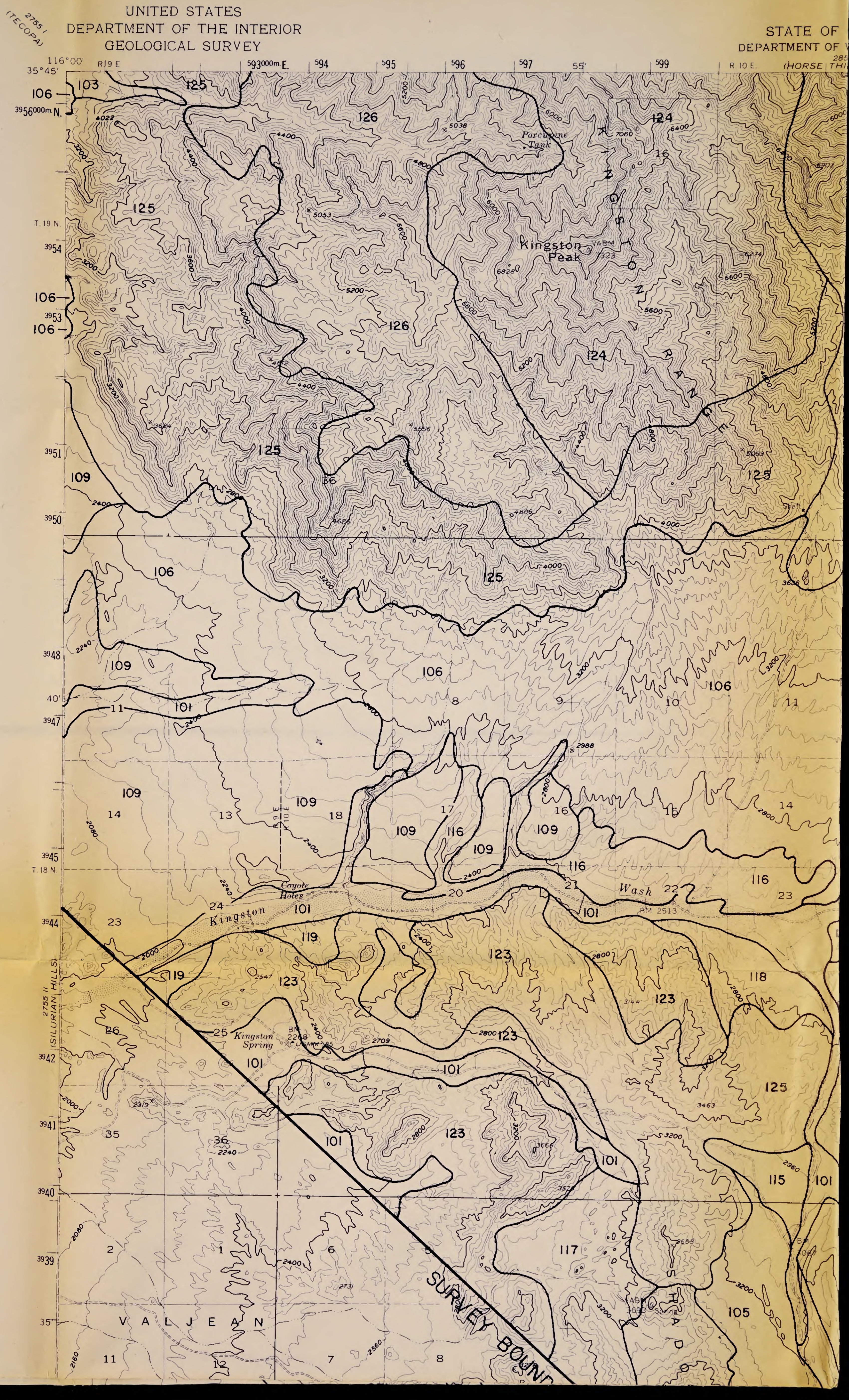

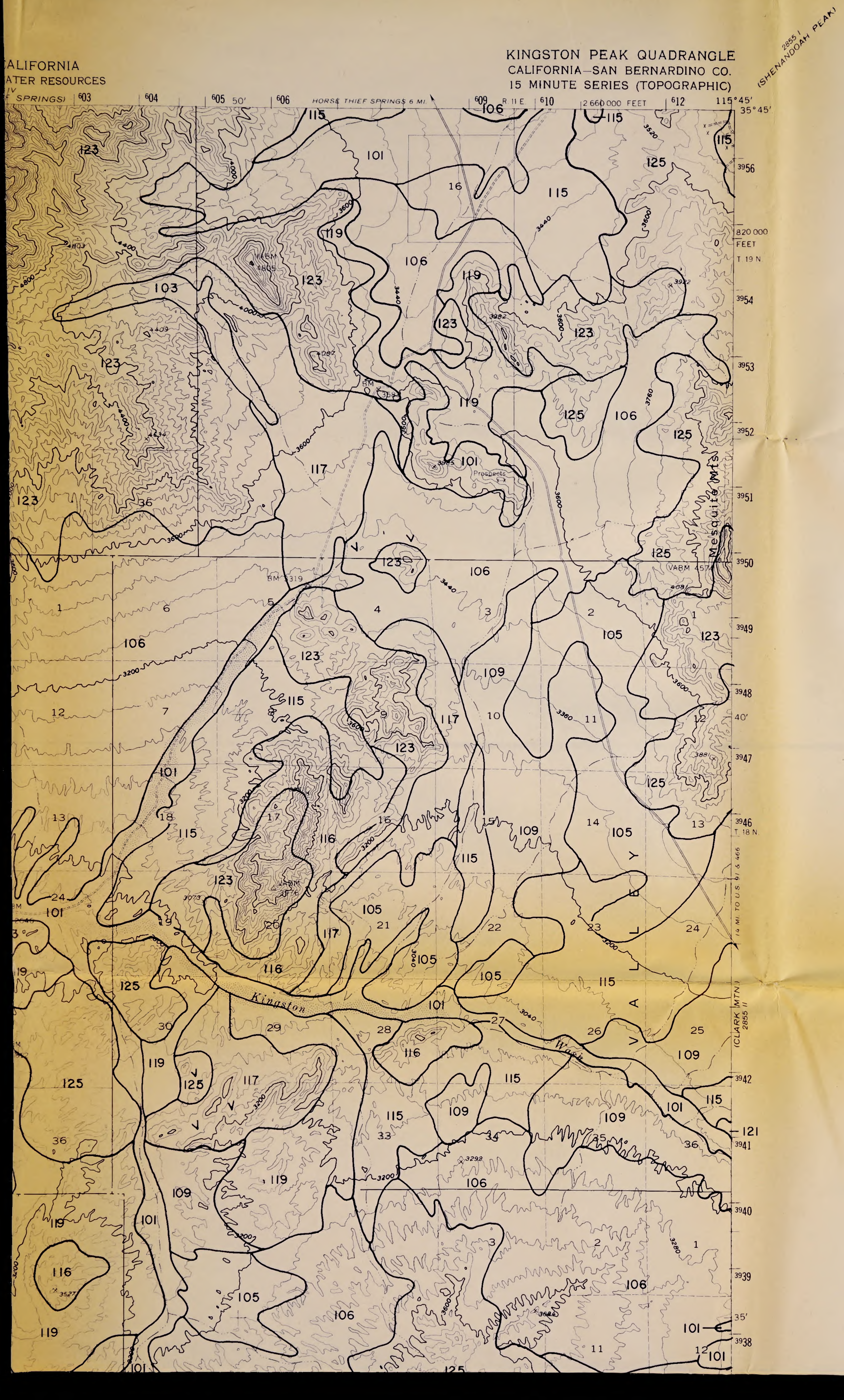
CALIFORNIA
ATER RESOURCES
KINGSTON PEAK QUADRANGLE
CALIFORNIA–SAN BERNARDINO CO.
15 MINUTE SERIES (TOPOGRAPHIC)
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VALLEY
Kingston
Wash
Prospects
VABM 4574
14 MI. TO U.S. 91 & 466
(CLARK MTN) 2855 II
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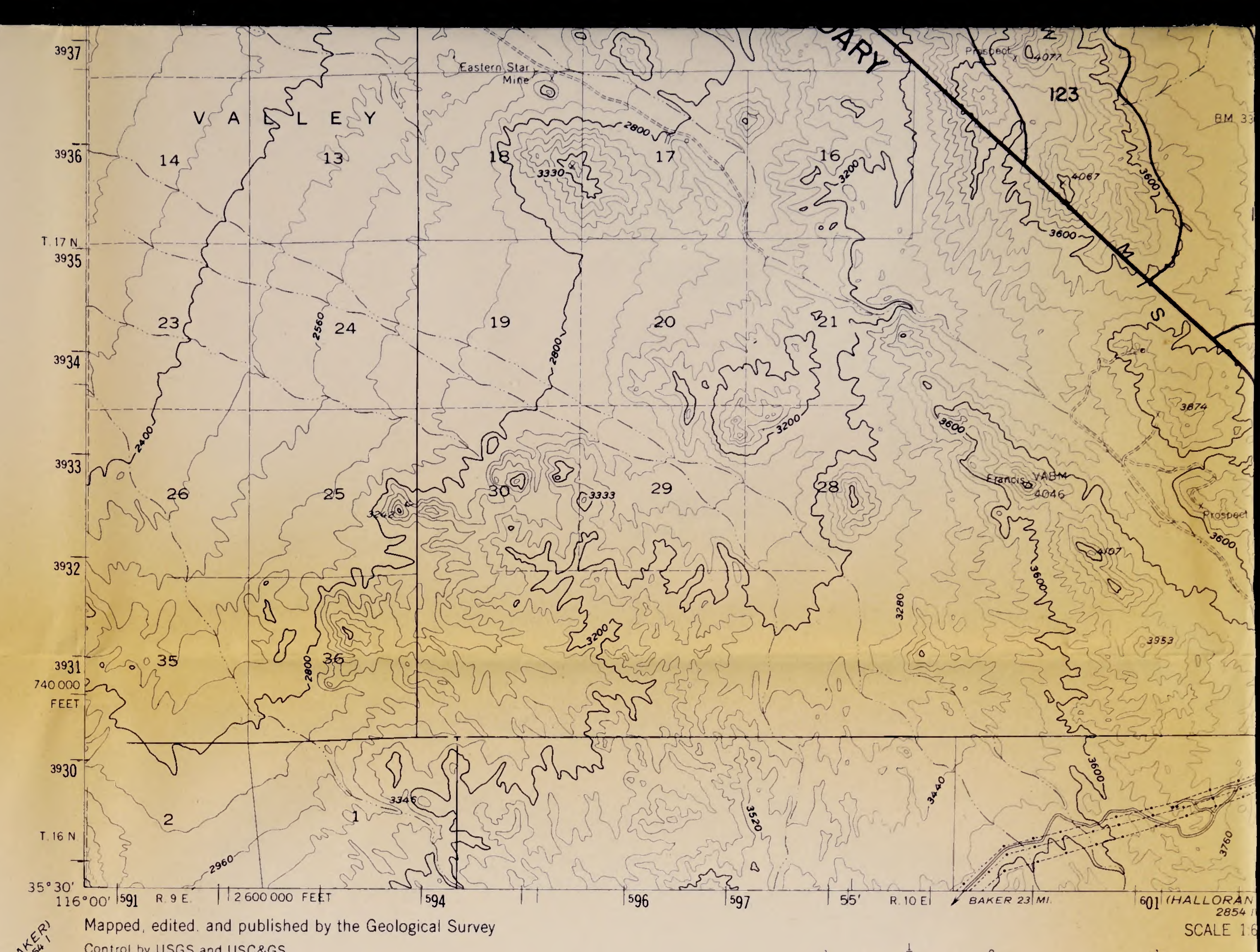

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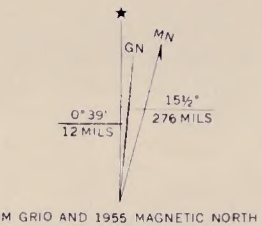
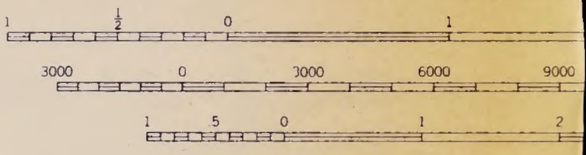


UTM GRID AND 1955 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:6



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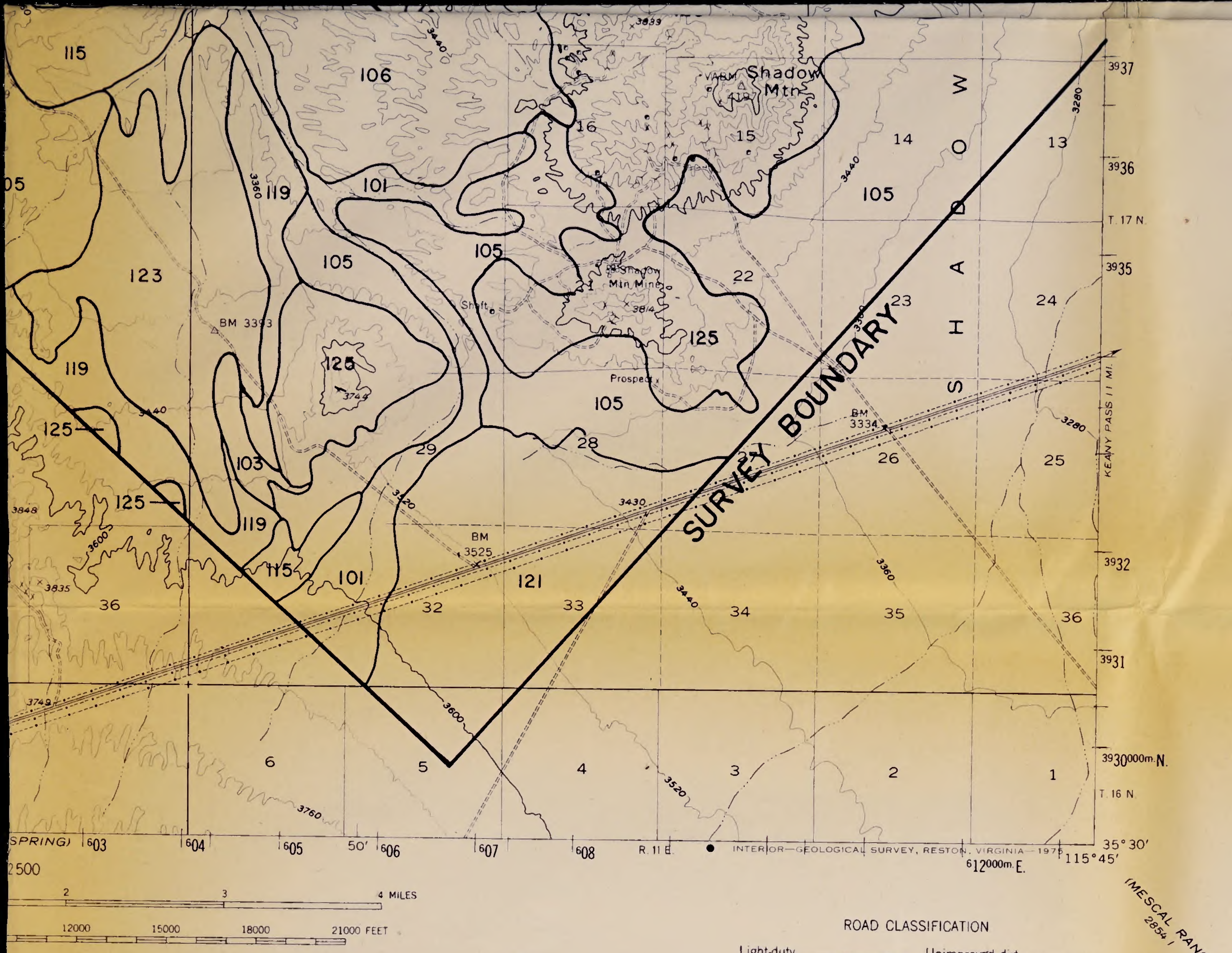

AL 80 FEET
CAL DATUM OF 1929

L MAP ACCURACY STANDARDS
OLORADO 80225, OR RESTON, VIRGINIA 22092
D SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Light-duty ——— Unimproved dirt - - - - -

QUADRANGLE LOCATION

KINGSTON PEAK, CALIF.
N3530—W11545/15

1955

AMS 2855 III—SERIES V795

UNITED STATES
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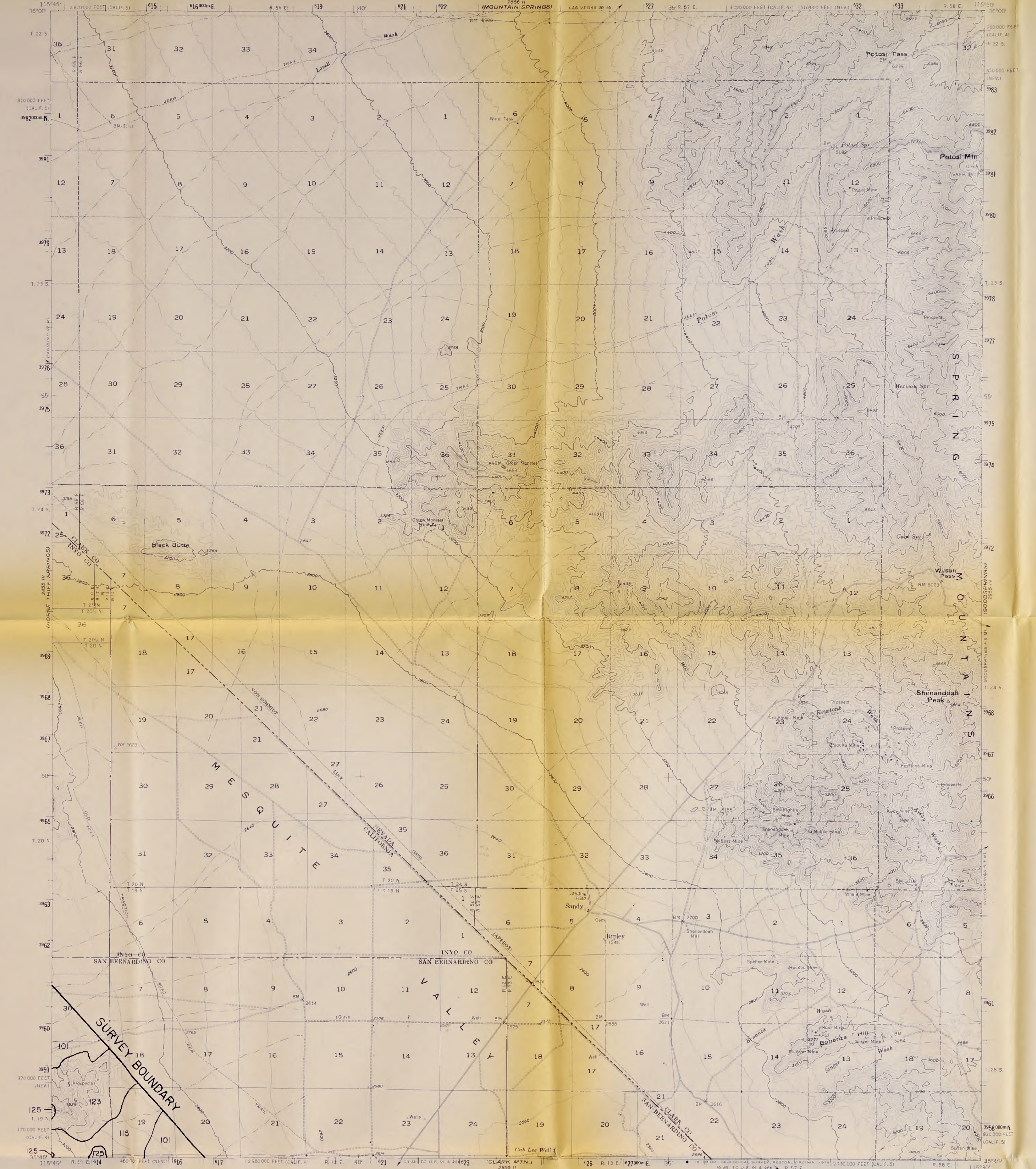
GEOLOGICAL SURVEY

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

SHENANDOAH PEAK QUADRANGLE
NEVADA—CALIFORNIA
15 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS & USC&GS

Topography from aerial photographs by multiplex methods and by planetable surveys 1956. Aerial photographs taken 1953 and 1954

Polyconic projection. 1927 North American datum
10,000-foot grids based on Nevada coordinate system, east zone and California coordinate system, zones 5 and 4

Dashed land lines indicate approximate locations

Unchecked elevations are shown in brown

1000-metre Universal Transverse Mercator grid ticks, zone 11, shown in blue

UTM GRID AND 1956 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:62500

CONTOUR INTERVAL 80 FEET
DASHED LINES REPRESENT 40-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

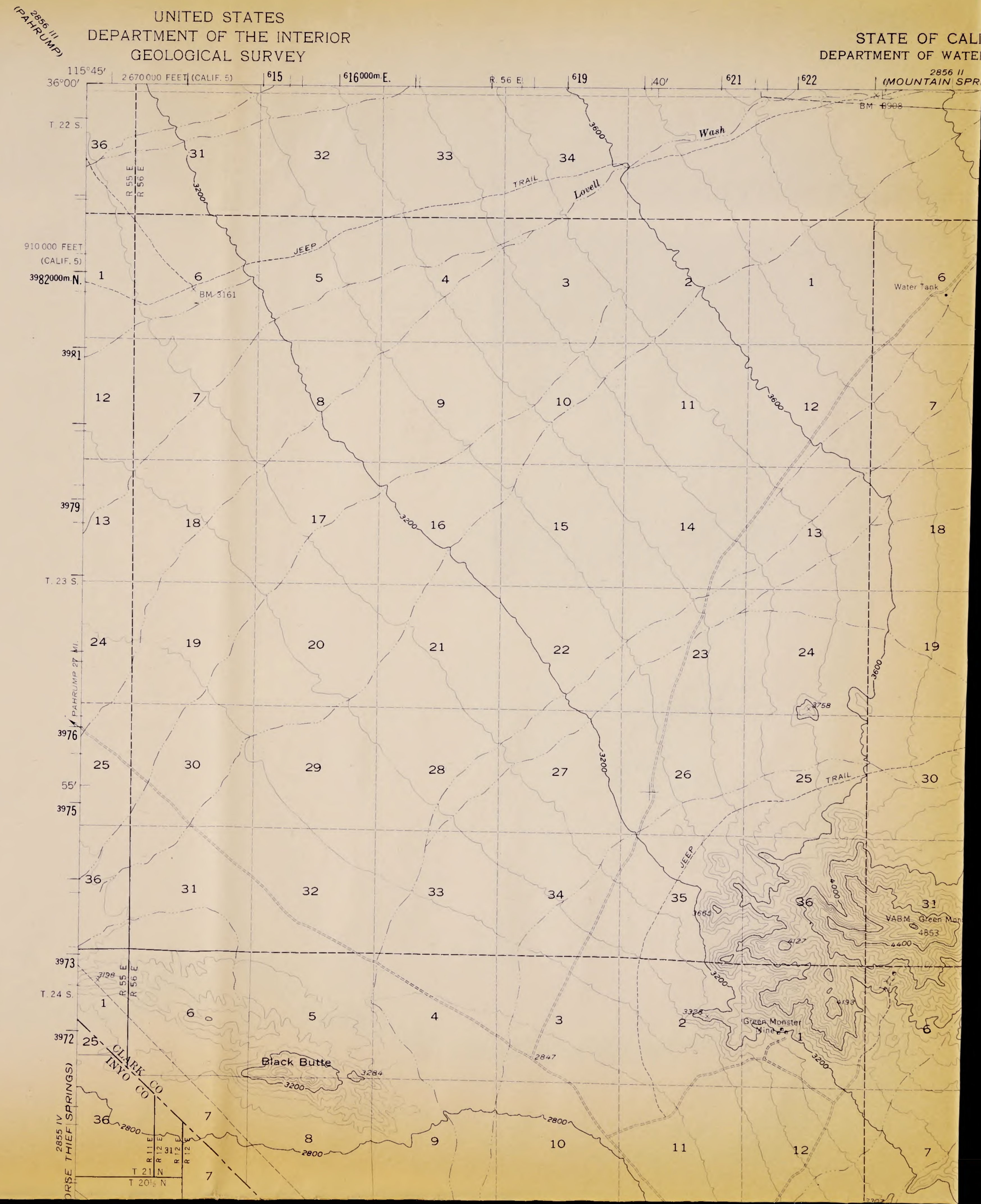
NEVADA
QUADRANGLE LOCATION

ROAD CLASSIFICATION
Light-duty ——— Unimproved dirt - - - - -

SHENANDOAH PEAK, NEV.—CALIF.
N3545—W11530/15
1956
AMS 2855 I—SERIES V796

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

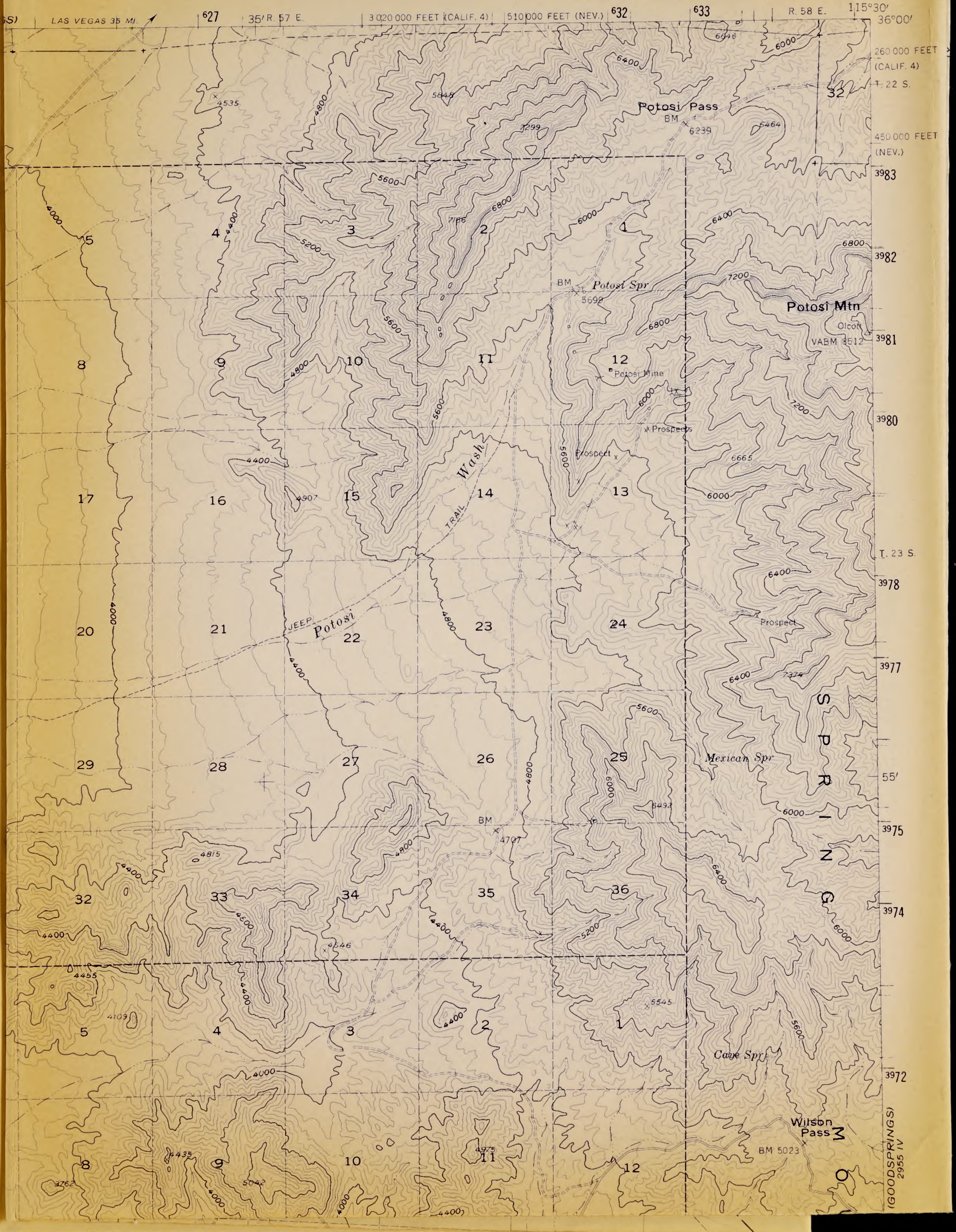
STATE OF CALI
DEPARTMENT OF WATER

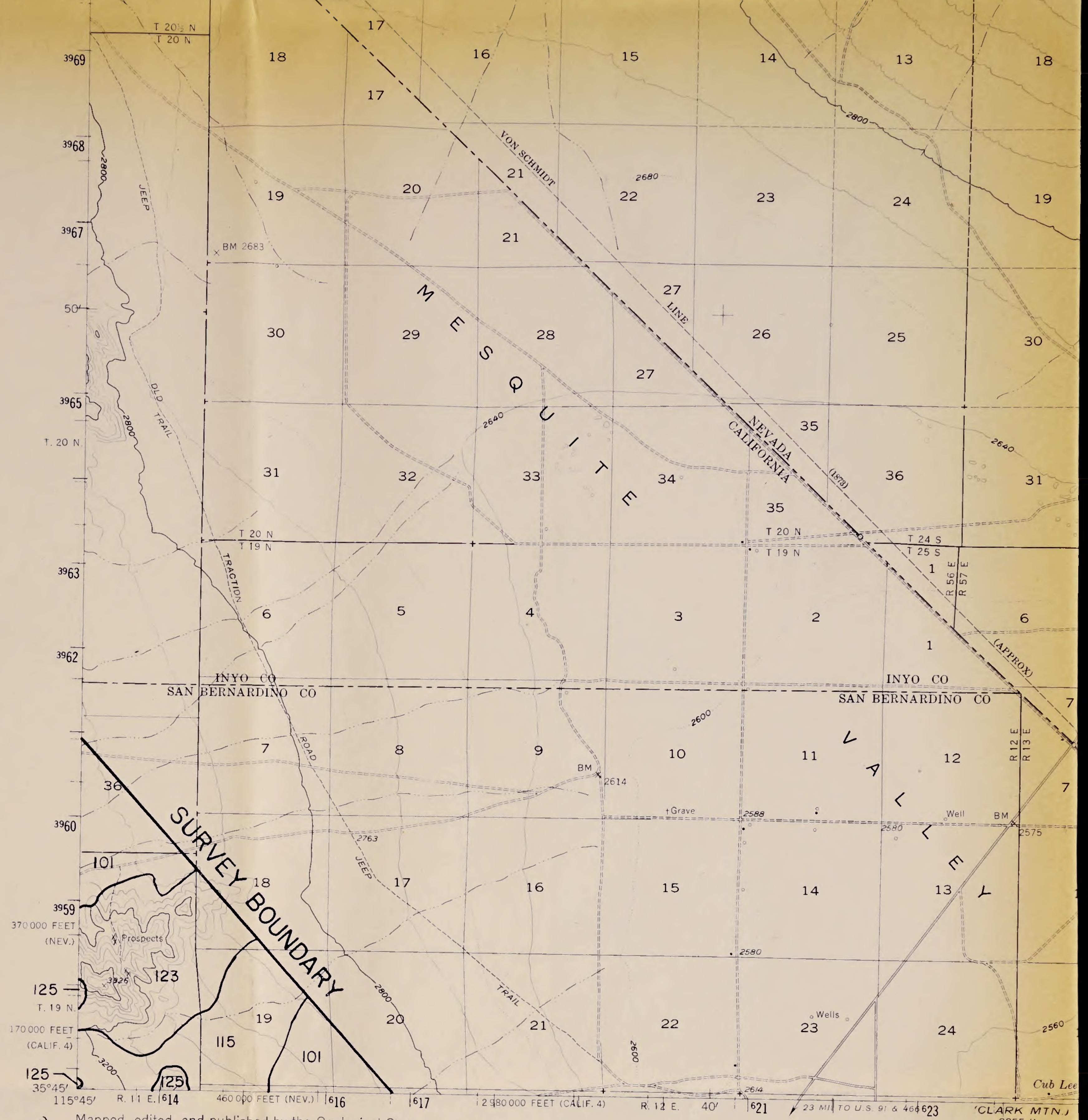


ORNIA
RESOURCES

SHENANDOAH PEAK QUADRANGLE

NEVADA--CALIFORNIA
15 MINUTE SERIES (TOPOGRAPHIC)





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Control by USGS & USC&GS

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Polyconic projection. 1927 North American datum
10,000-foot grids based on Nevada coordinate system, east zone and California coordinate system, zones 5 and 4

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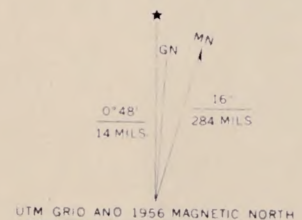
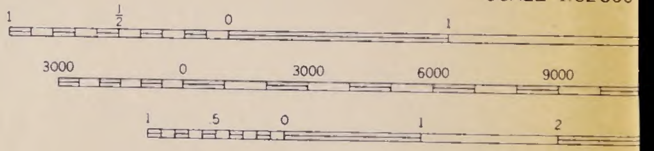
1000-metre Universal Transverse Mercator grid ticks, zone 11, shown in blue



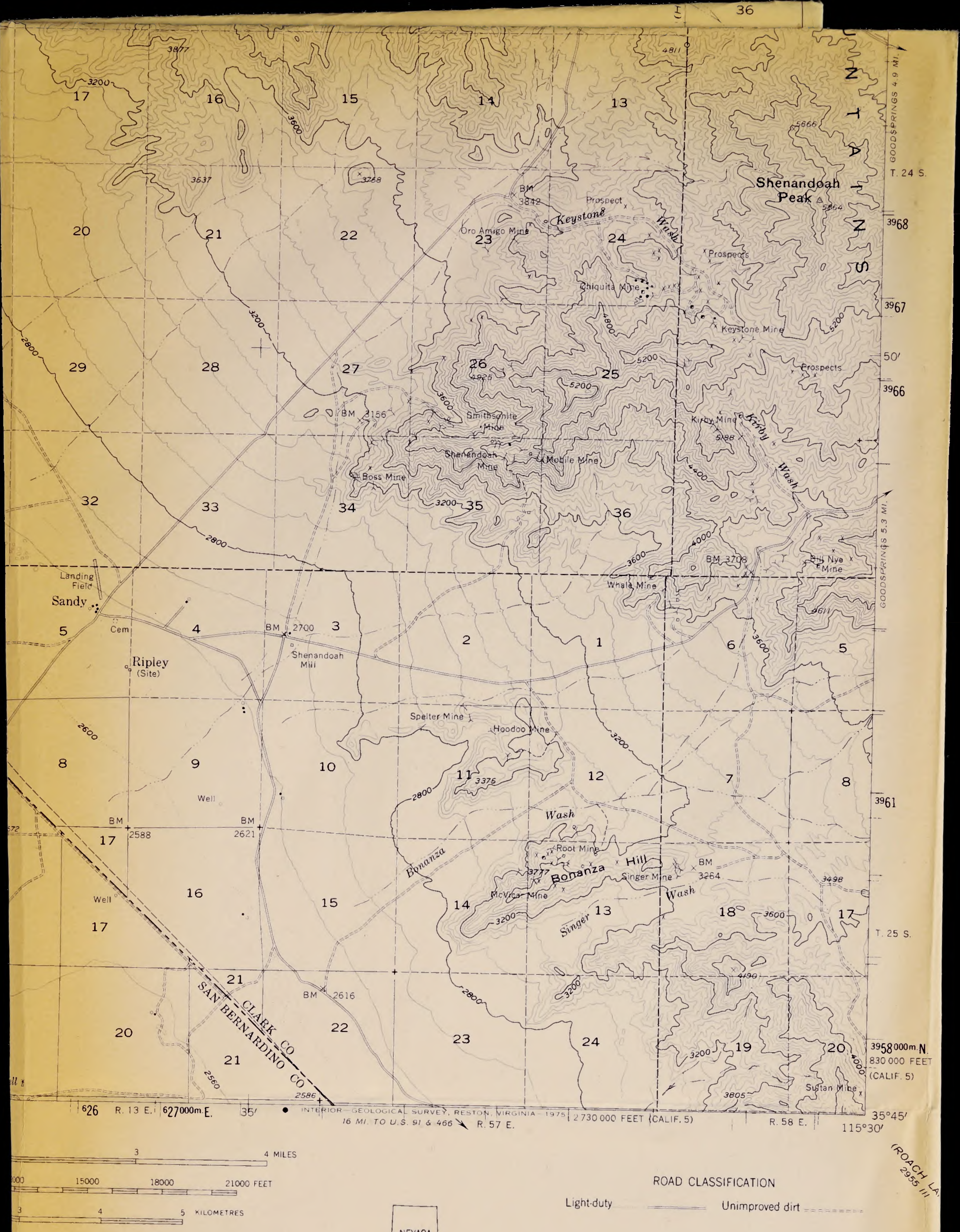
UTM GRID AND 1956 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:62500



CONTOUR INTERVAL 80
DASHED LINES REPRESENT 40-FO
NATIONAL GEODETIC VERTICAL DA

THIS MAP COMPLIES WITH NATIONAL MAP
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORA
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYM



CONTOURS
OF 1929

RACY STANDARDS
80225, OR RESTON, VIRGINIA 22092
IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Light-duty ═══	Unimproved dirt ┄┄┄

QUADRANGLE LOCATION

SHENANDOAH PEAK, NEV.—CALIF.

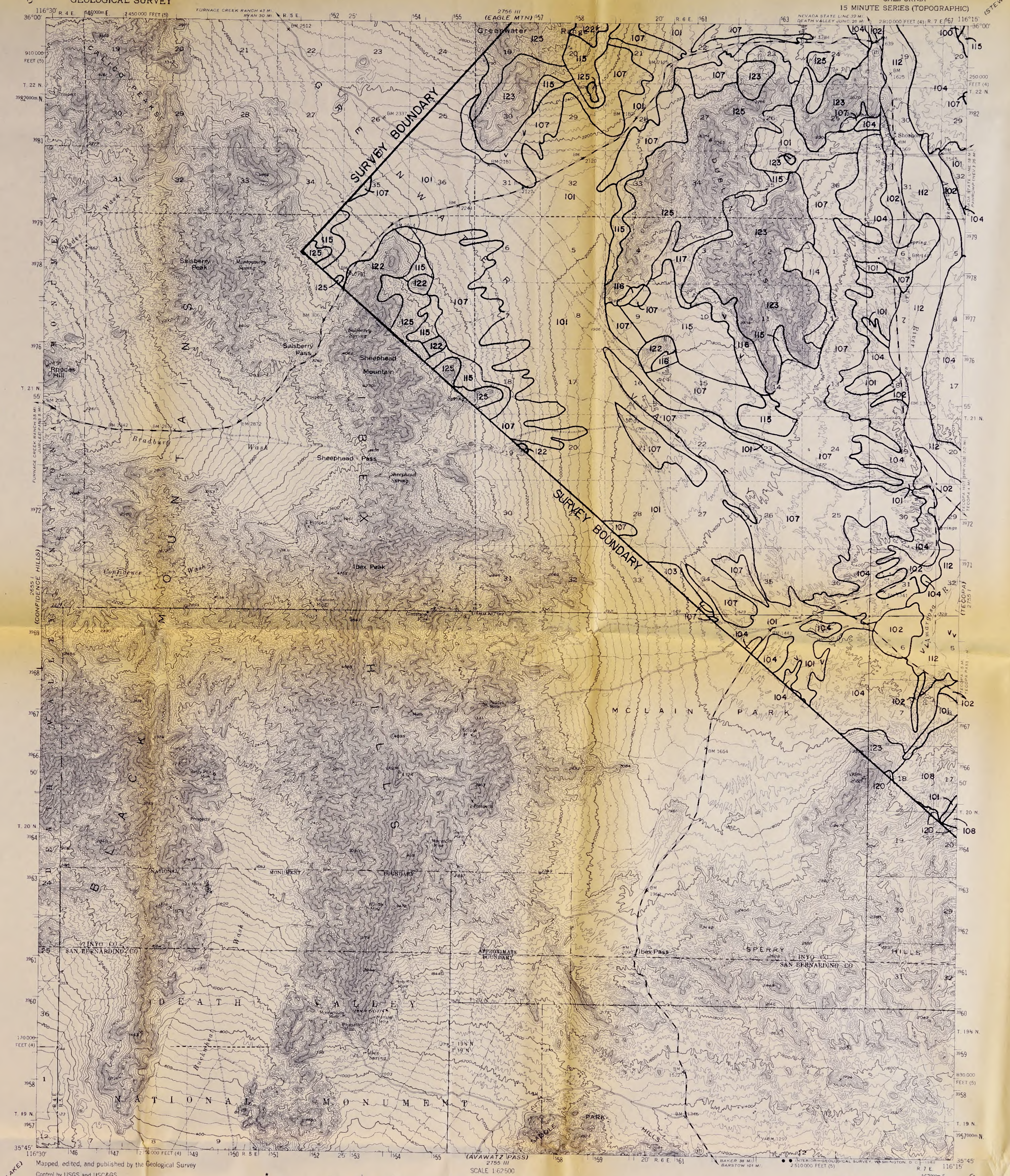
N3545—W11530/15

1956

AMS 2855 I—SERIES V796

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SHOSHONE QUADRANGLE
CALIFORNIA
15 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by multiplex methods
Aerial photographs taken 1948. Field check 1951

Polyconic projection. 1927 North American datum
10,000-foot grids based on California coordinate system, zones 4 and 5

Dashed land lines indicate approximate locations

Unchecked elevations are shown in brown

1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue

UTM GRID AND 1951 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:62500

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

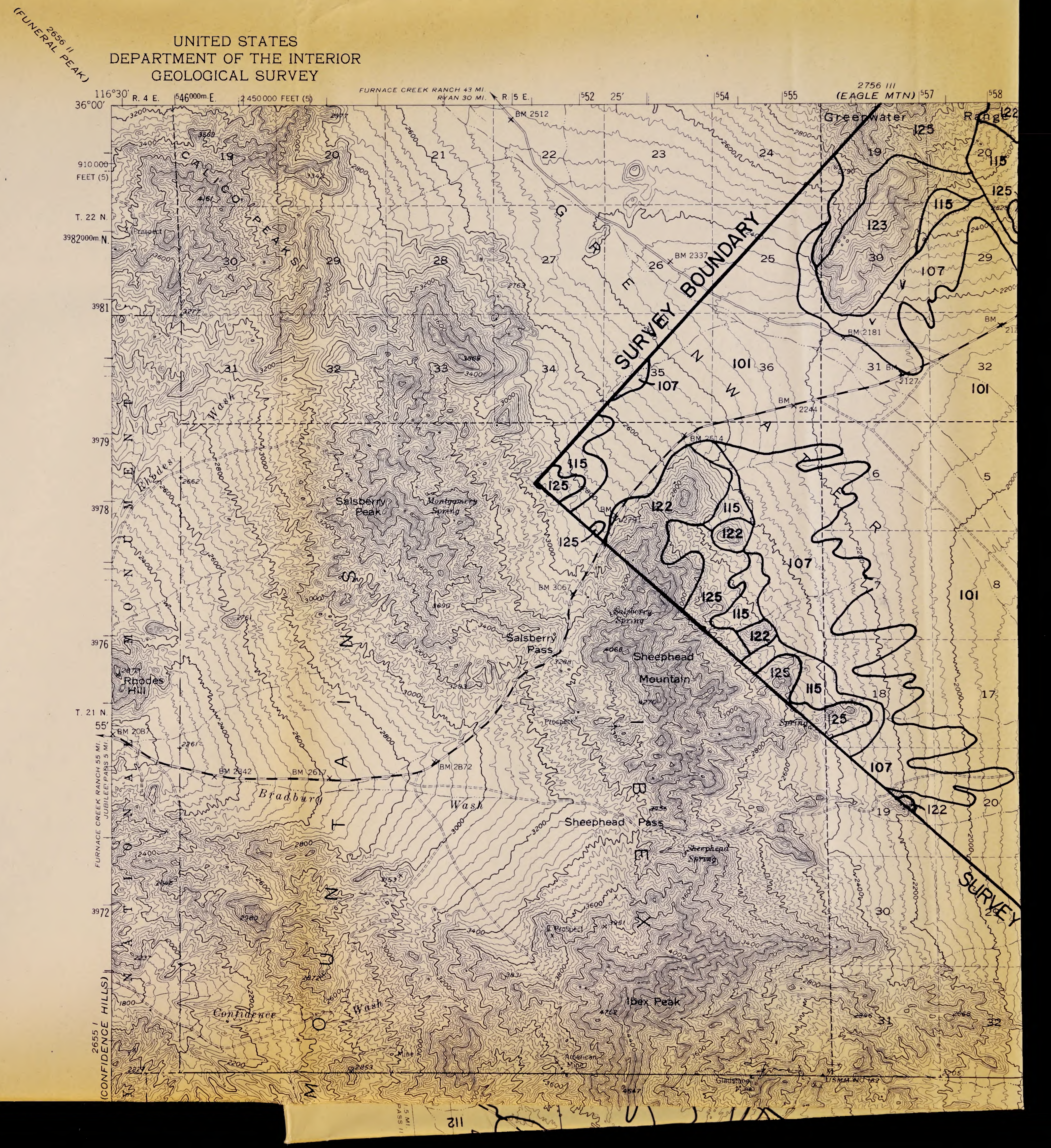
ROAD CLASSIFICATION
Heavy-duty — 4 LANE | 6 LANE
Medium-duty — 4 LANE | 6 LANE
Light-duty
Unimproved dirt
U. S. Route
State Route

SHOSHONE, CALIF.
N3545—W11615/15

1951

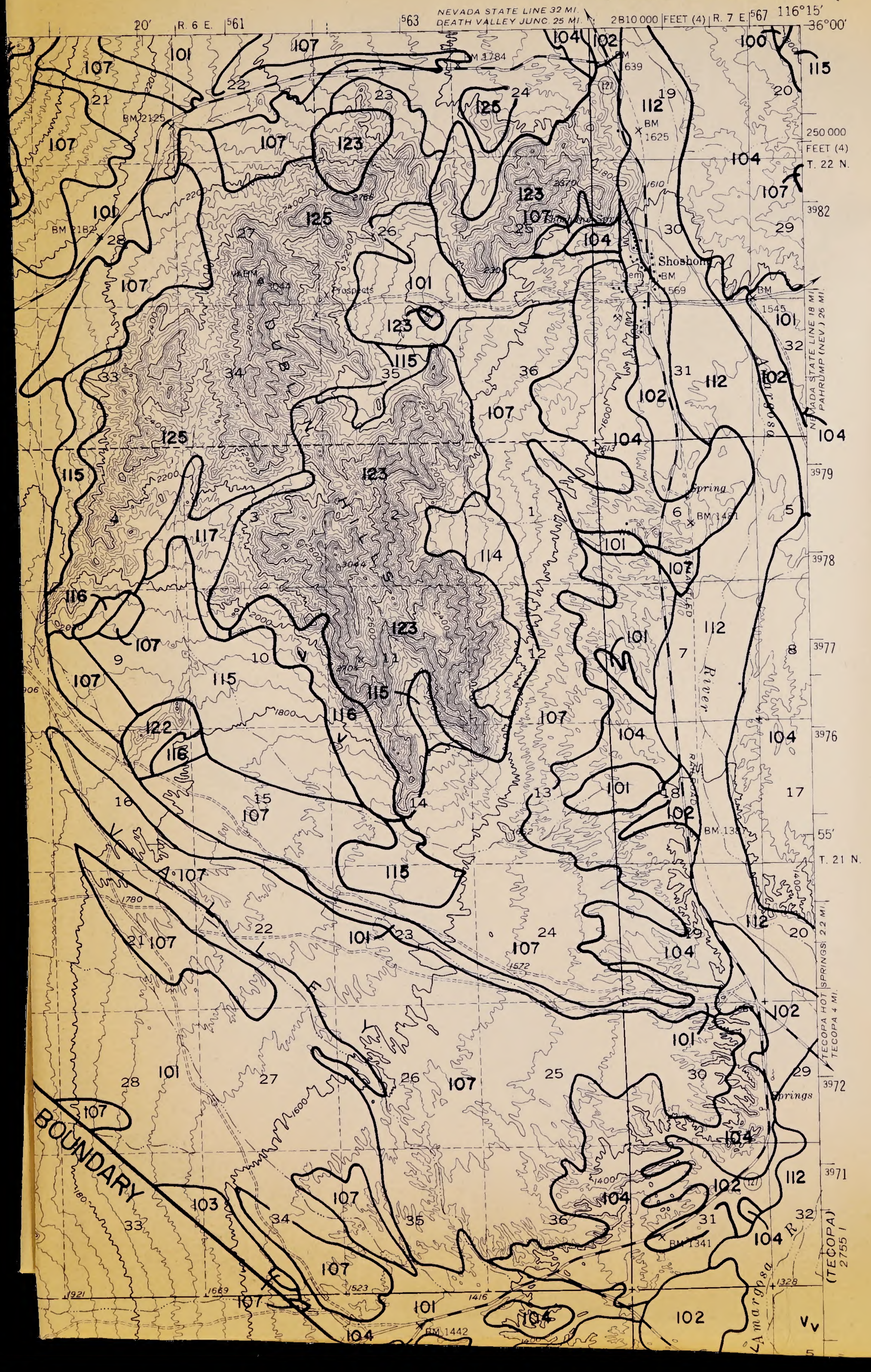
AMS 2755 IV–SERIES V795

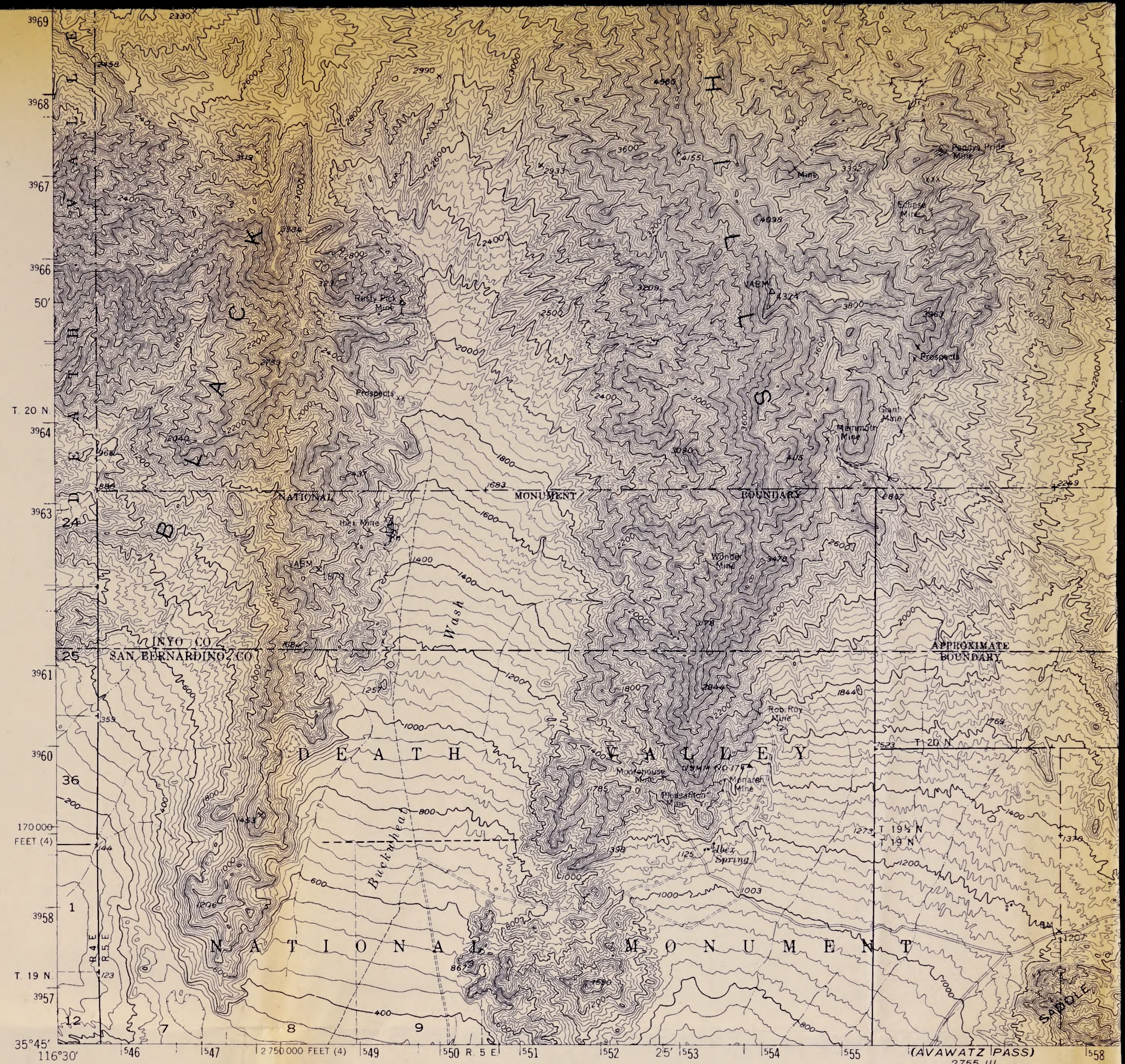
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



SHOSHONE QUADRANGLE
CALIFORNIA
15 MINUTE SERIES (TOPOGRAPHIC)

2756 II
(STEWART VALLEY)





(LEACH LAKE)
2655 II

(AVAWATZ PASS)
2755 III

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

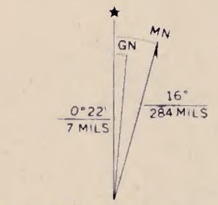
Topography from aerial photographs by multiplex methods
Aerial photographs taken 1948. Field check 1951

Polyconic projection. 1927 North American datum
10,000-foot grids based on California coordinate system, zones 4 and 5

Dashed land lines indicate approximate locations

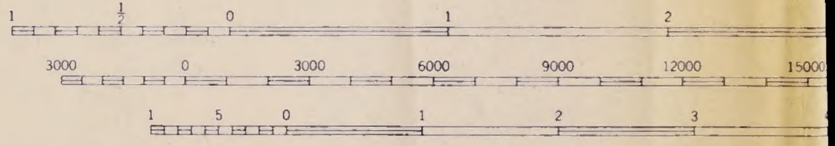
Unchecked elevations are shown in brown

1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue



UTM GRID AND 1951 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:62500

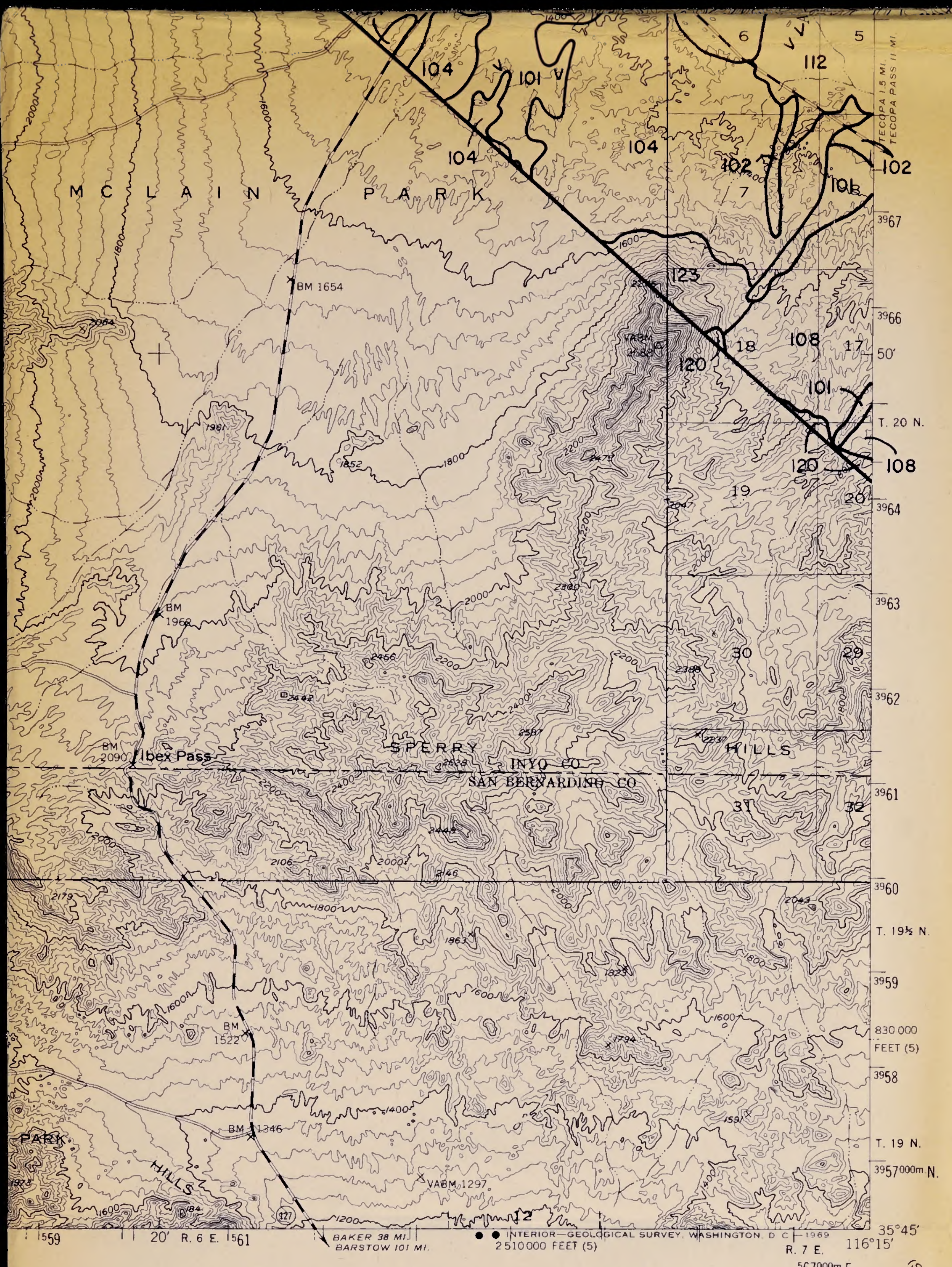


CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARD

FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR W

A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABL



3 4 MILES

18000 21000 FEET

5 KILOMETERS

ROAD CLASSIFICATION

Heavy-duty	4 LANE / 6 LANE	Light-duty	
Medium-duty	4 LANE / 6 LANE	Unimproved dirt	

U. S. Route   State Route

SHOSHONE, CALIF.
N3545—W11615/15

1951

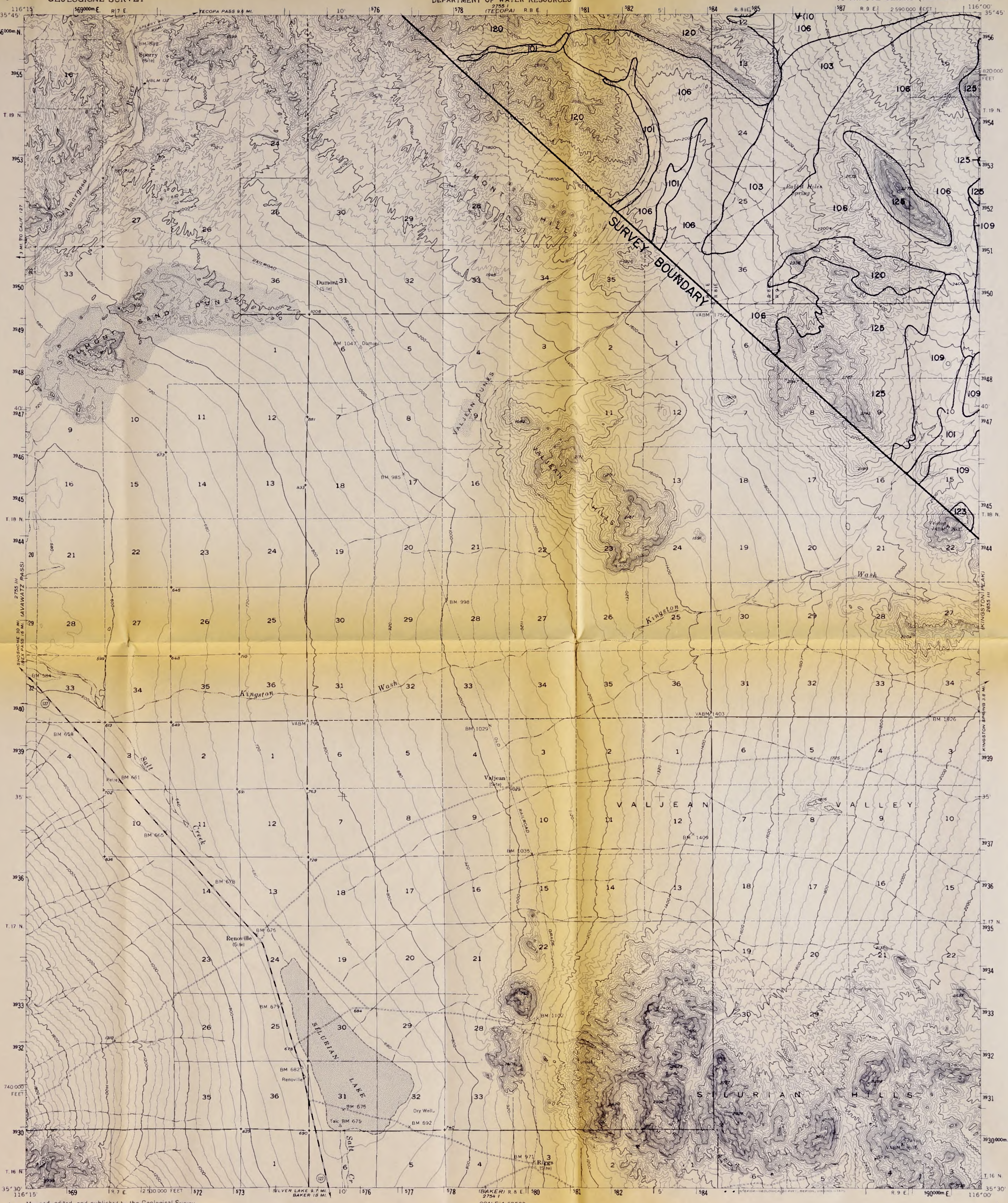
AMS 2755 IV—SERIES V795

SHINGTON, D. C. 20242
ON REQUEST

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

SILURIAN HILLS QUADRANGLE
CALIFORNIA–SAN BERNARDINO CO.
15 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by multiplex methods and by planetable surveys 1956. Aerial photographs taken 1953

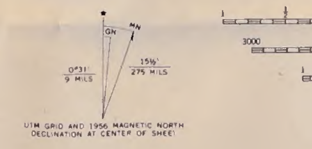
Advance field check 1955

Polyconic projection. 1927 North American datum

10,000-foot grid based on California coordinate system, zone 5

Dashed land lines indicate approximate locations

1000-metre Universal Transverse Mercator grid ticks, zone 11, shown in blue



UTM GRID AND 1956 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:62500

1 ½ 0 1 2 3 4 MILES

3000 0 3000 6000 9000 12000 15000 18000 21000 FEET

1 .5 0 1 2 3 4 5 KILOMETRES

CONTOUR INTERVAL 40 FEET
DASHED LINES REPRESENT 20-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

ROAD CLASSIFICATION
1964

Medium-duty	Light-duty
Unimproved dirt	
○ State Route	

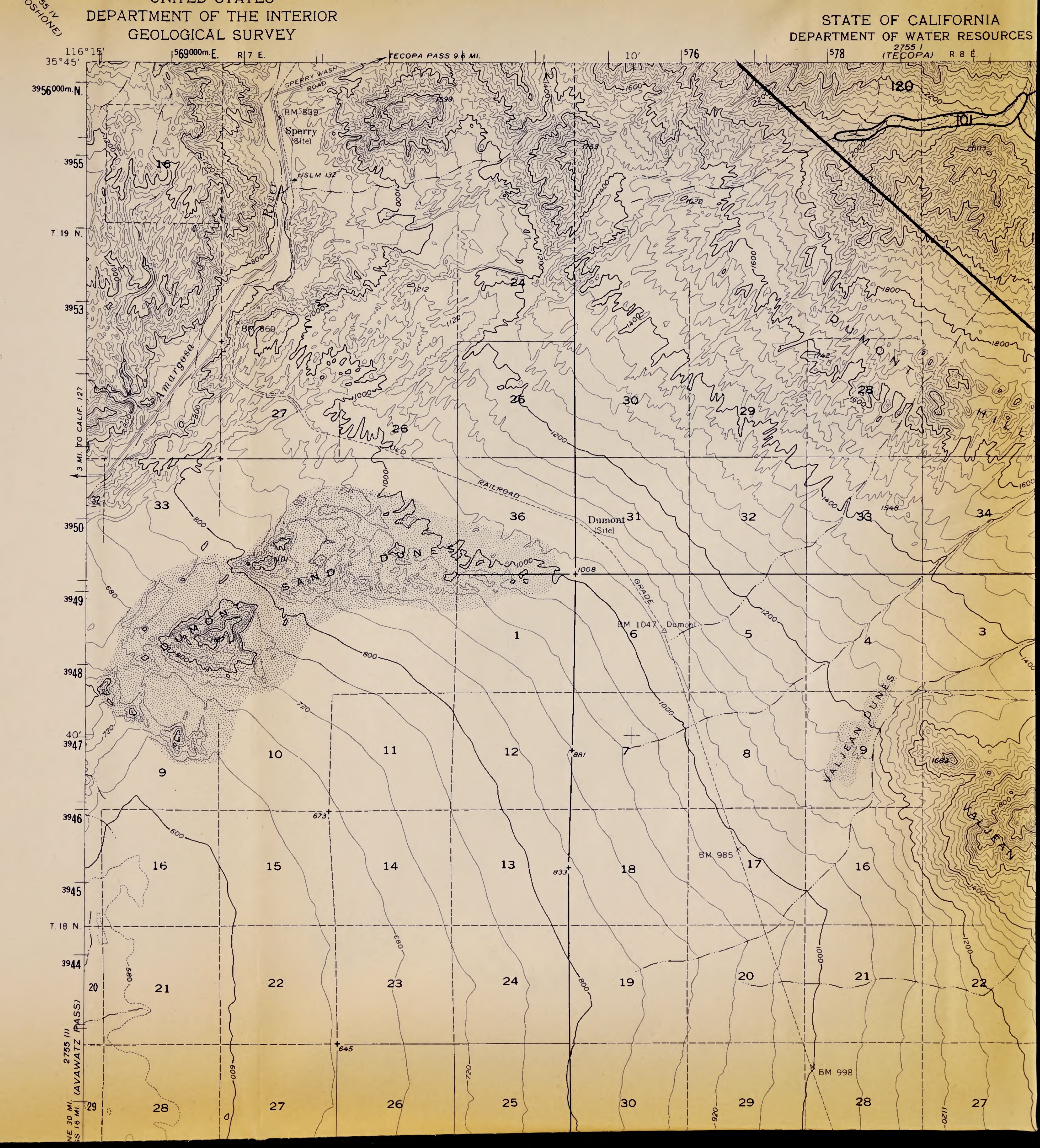
SILURIAN HILLS, CALIF.
N3530—W11600/15

1956

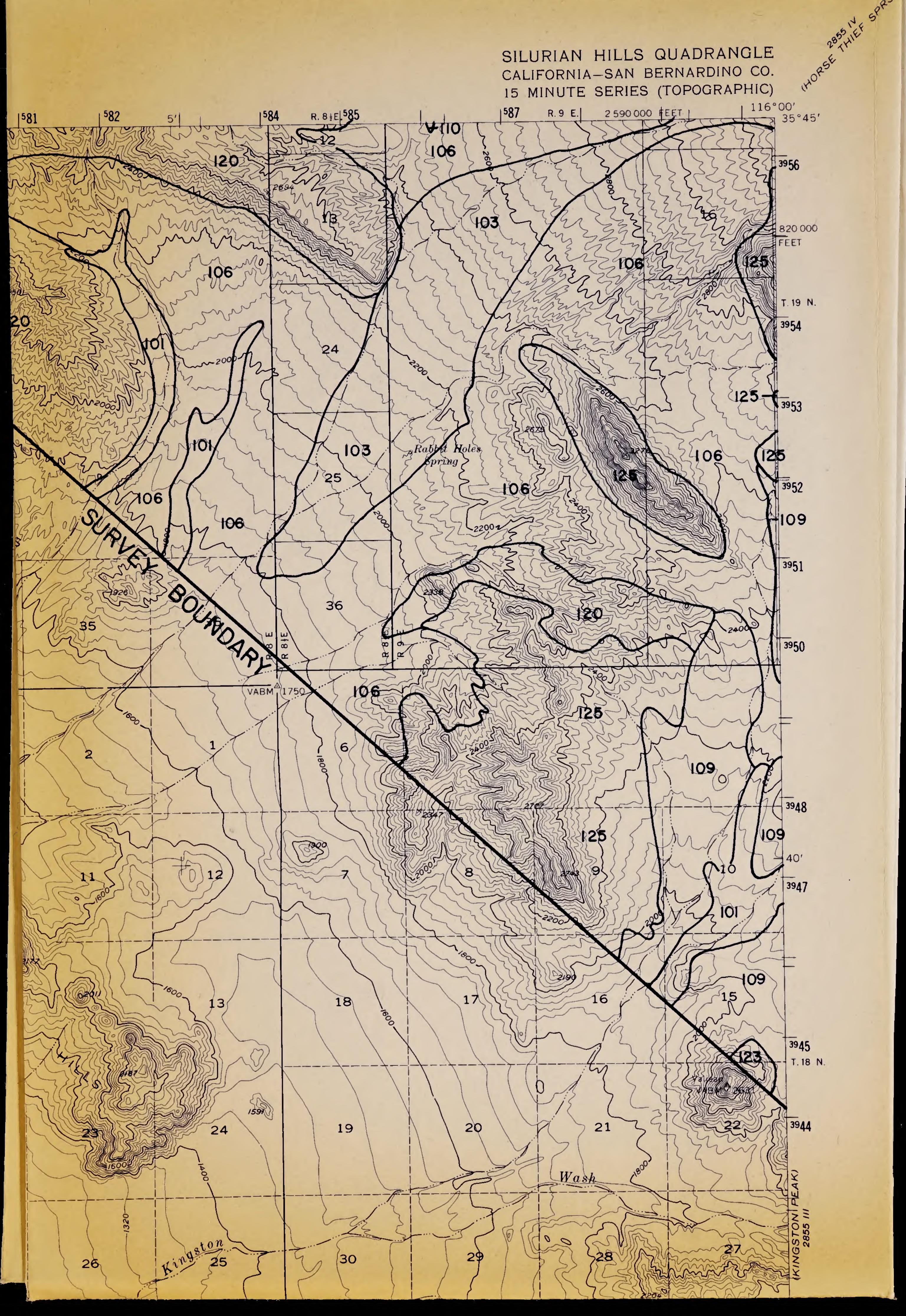
AMS 2755 II—SERIES V795

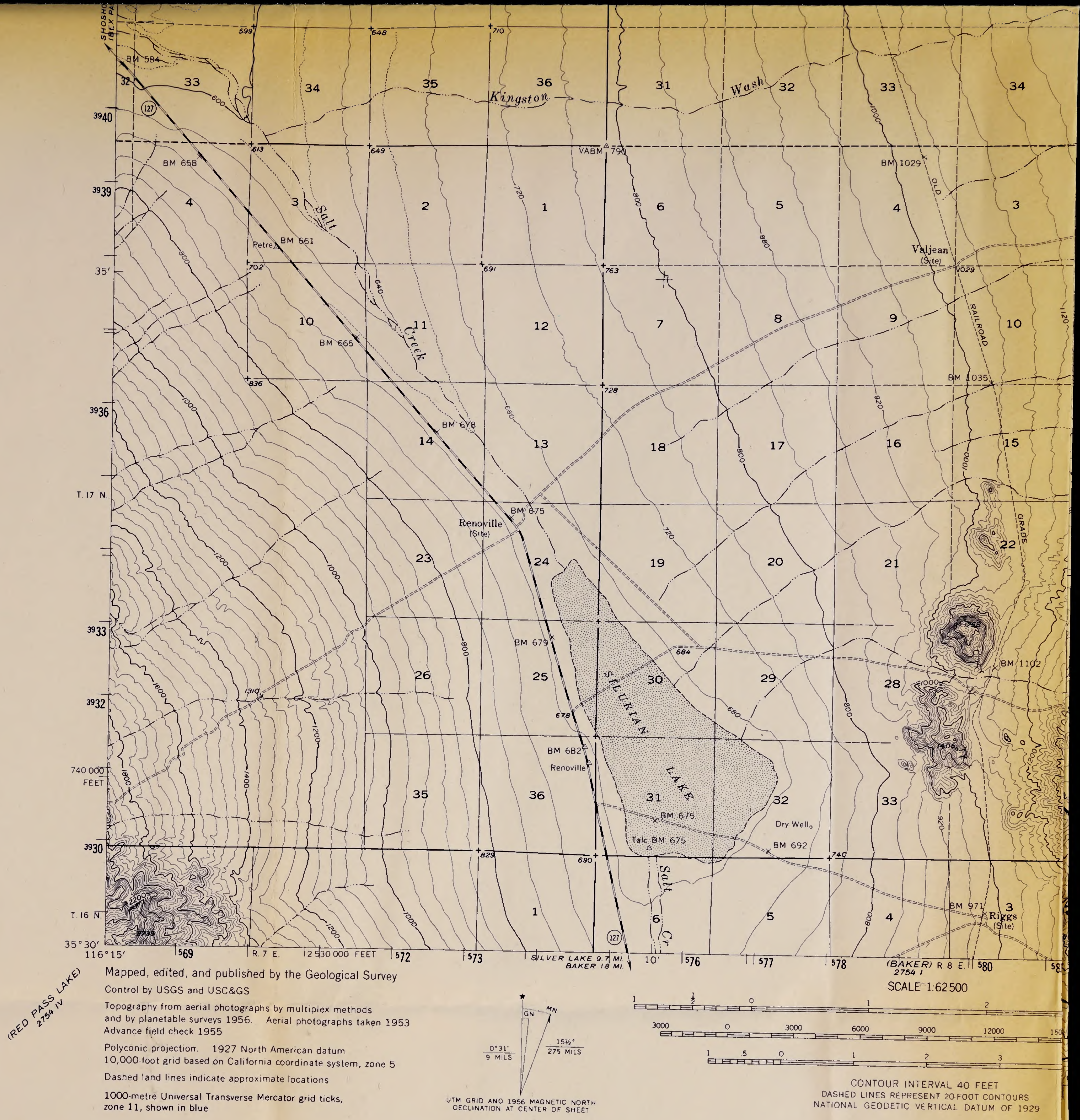
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES



SILURIAN HILLS QUADRANGLE
CALIFORNIA–SAN BERNARDINO CO.
15 MINUTE SERIES (TOPOGRAPHIC)





Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by multiplex methods
and by planetable surveys 1956. Aerial photographs taken 1953
Advance field check 1955

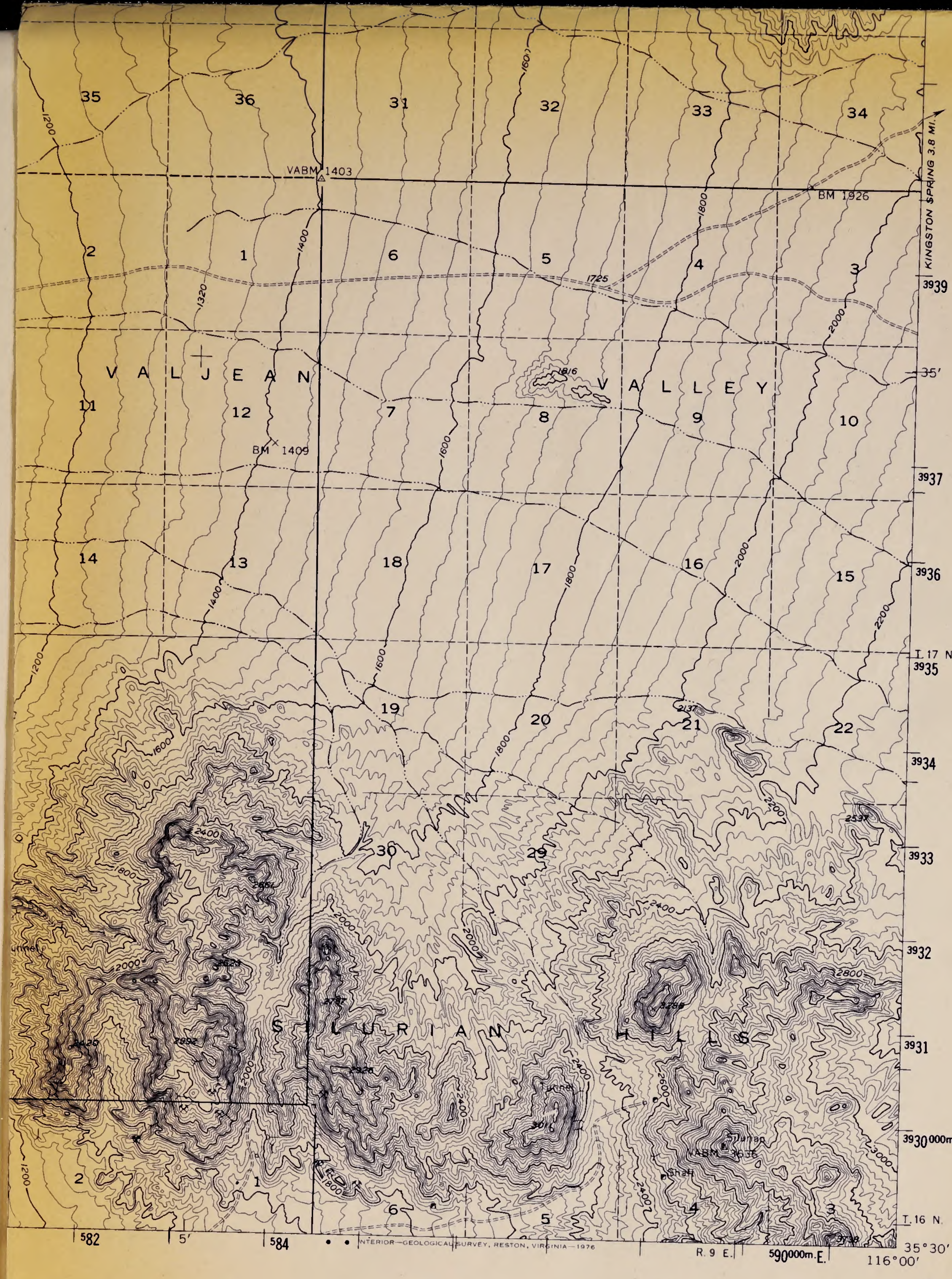
Polyconic projection. 1927 North American datum
10,000-foot grid based on California coordinate system, zone 5

Dashed land lines indicate approximate locations

1000-metre Universal Transverse Mercator grid ticks,
zone 11, shown in blue

CONTOUR INTERVAL 40 FEET
DASHED LINES REPRESENT 20-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDAR
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RES
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON



3 4 MILES

0 18000 21000 FEET

4 5 KILOMETRES

ROAD CLASSIFICATION
1964

Medium-duty ▬▬ Light-duty ═══

Unimproved dirt ========

○ State Route

QUADRANGLE LOCATION

S
ON, VIRGINIA 22092
REQUEST

SILURIAN HILLS, CALIF.
N3530—W11600/15

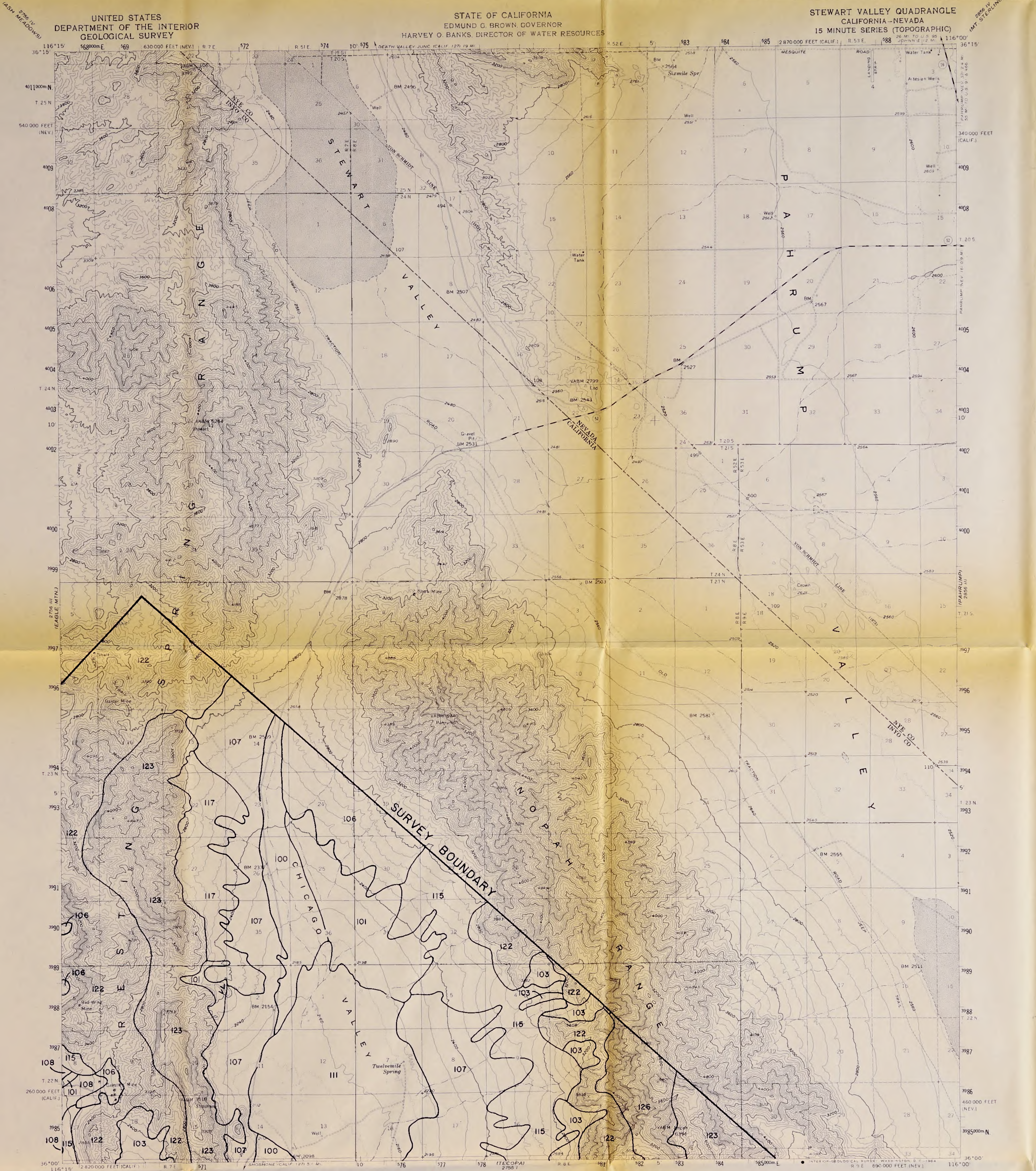
1956

AMS 2755 II—SERIES V795

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF CALIFORNIA
EDMUND G. BROWN, GOVERNOR
HARVEY O. BANKS, DIRECTOR OF WATER RESOURCES

STEWART VALLEY QUADRANGLE
CALIFORNIA–NEVADA
15 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by Wild A-8 plotter and by planetable surveys 1958. Aerial photographs taken 1953

Polyconic projection. 1927 North American datum
10,000-foot grids based on California coordinate system, zone 4, and Nevada coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue

Dashed land lines indicate approximate locations

UTM GRID AND 1958 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:62500

CONTOUR INTERVAL 80 FEET
DOTTED LINES REPRESENT 40-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 25, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

ROAD CLASSIFICATION
Medium-duty — Light-duty
Unimproved dirt
State Route

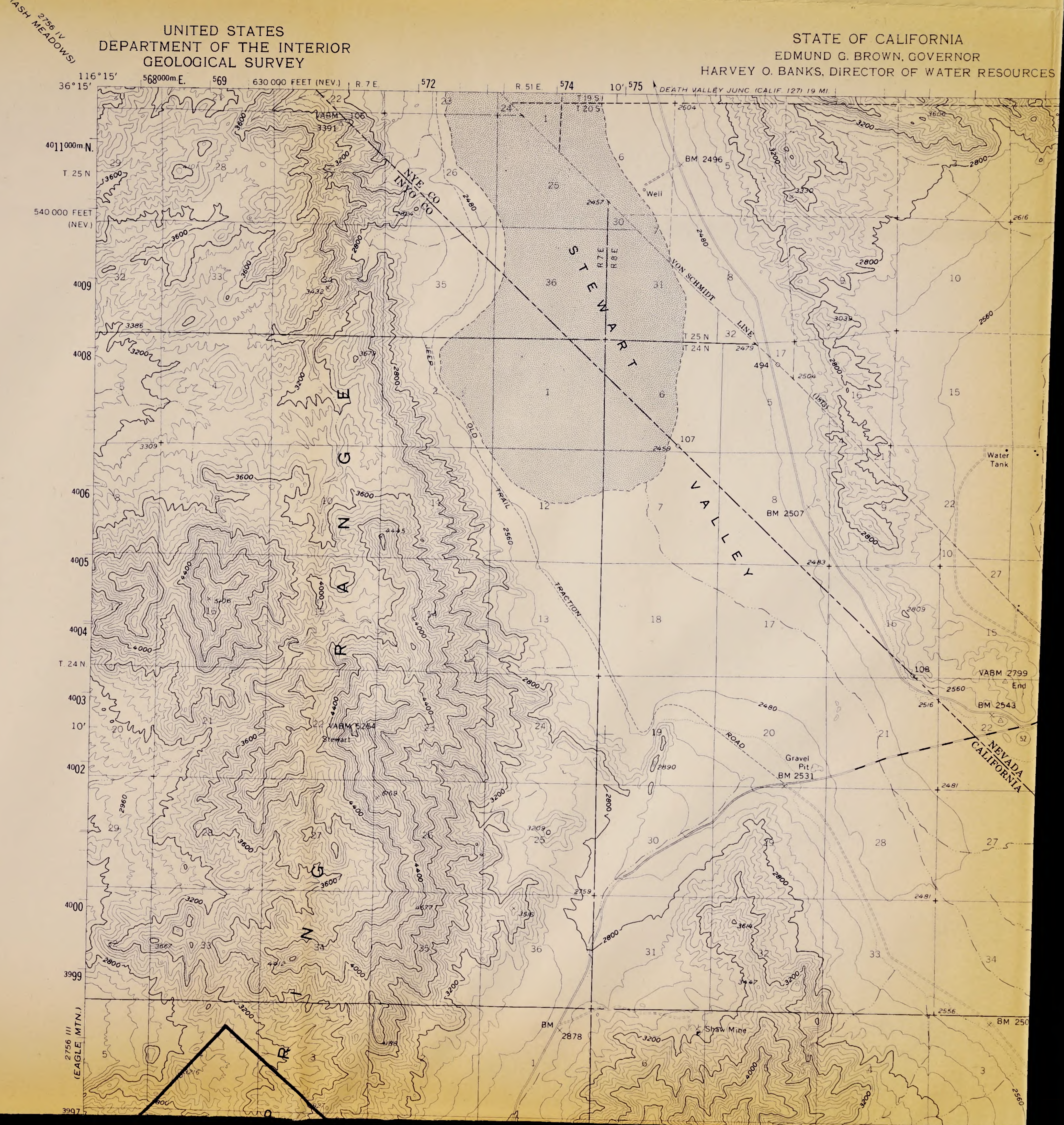
STEWART VALLEY, CALIF.–NEV.
N3600—W11600/15

1958
AMS 2756 II SERIES V795

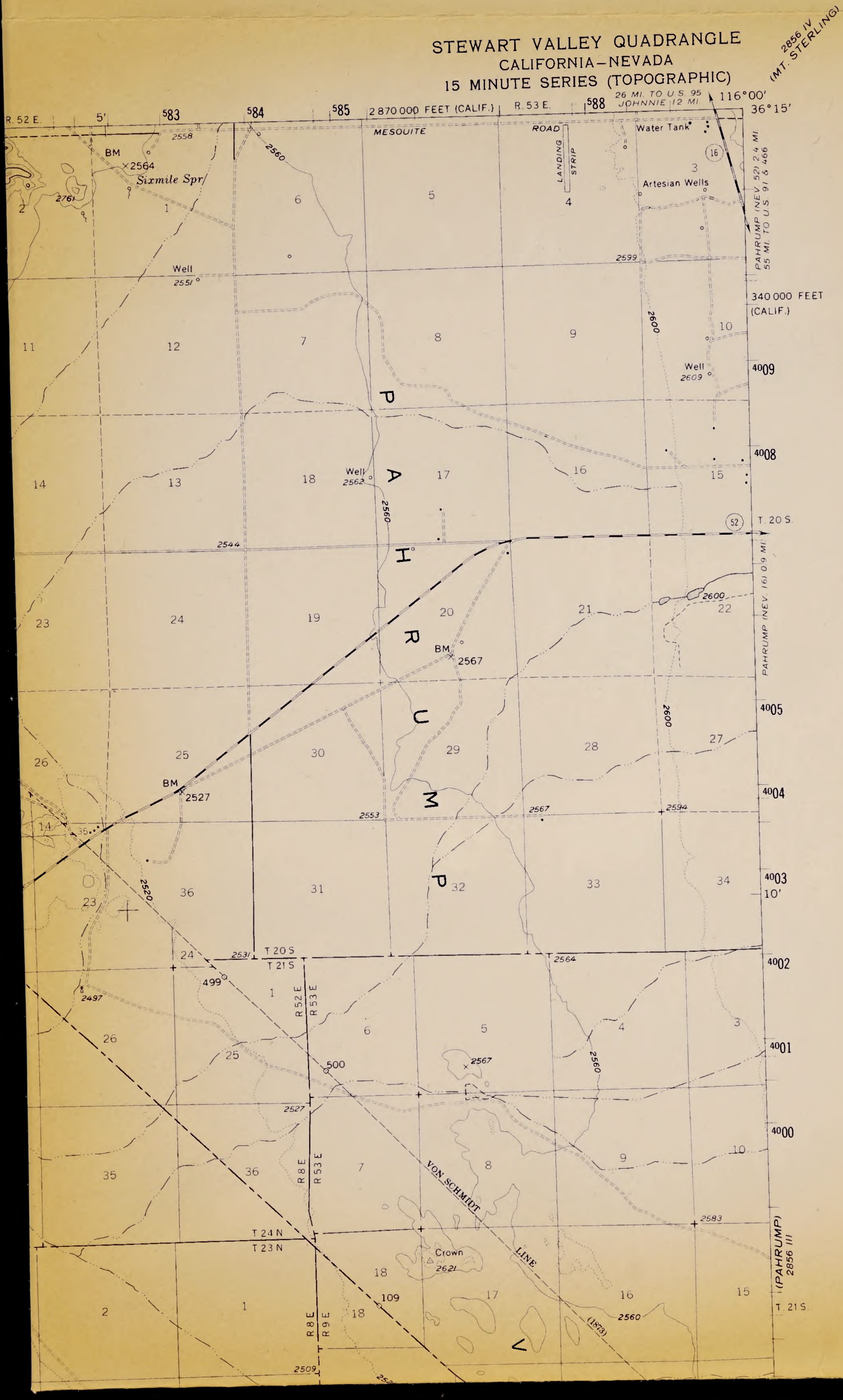
C

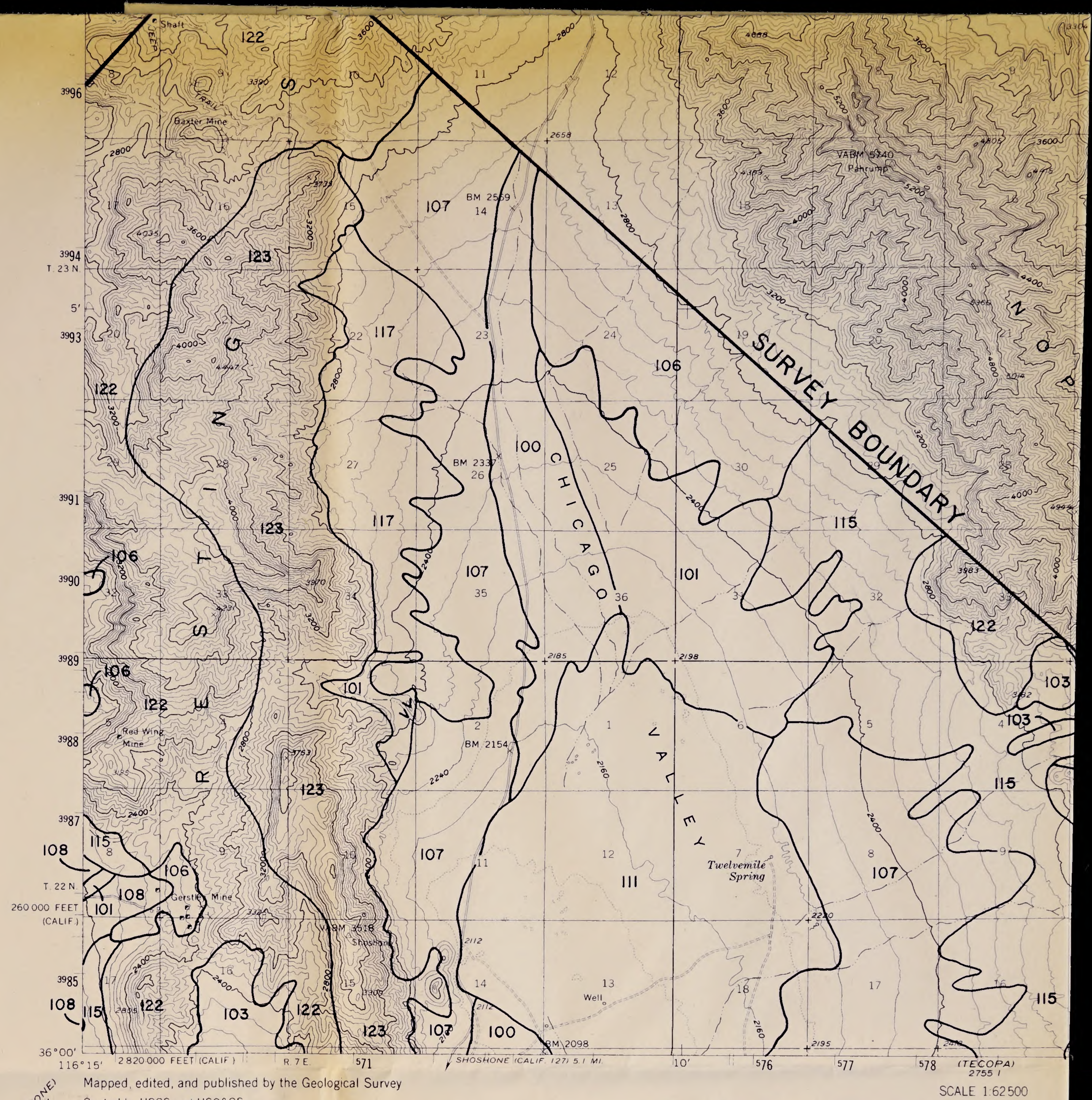
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF CALIFORNIA
EDMUND G. BROWN, GOVERNOR
HARVEY O. BANKS, DIRECTOR OF WATER RESOURCES



STEWART VALLEY QUADRANGLE
CALIFORNIA–NEVADA
15 MINUTE SERIES (TOPOGRAPHIC)





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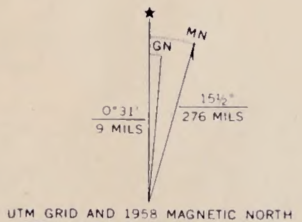
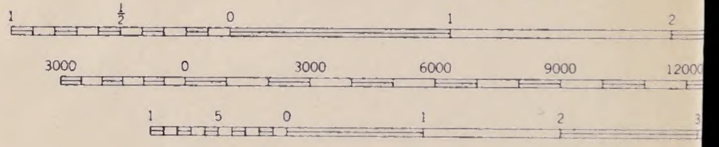
zone 11, shown in blue

Dashed land lines indicate approximate locations



UTM GRID AND 1958 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

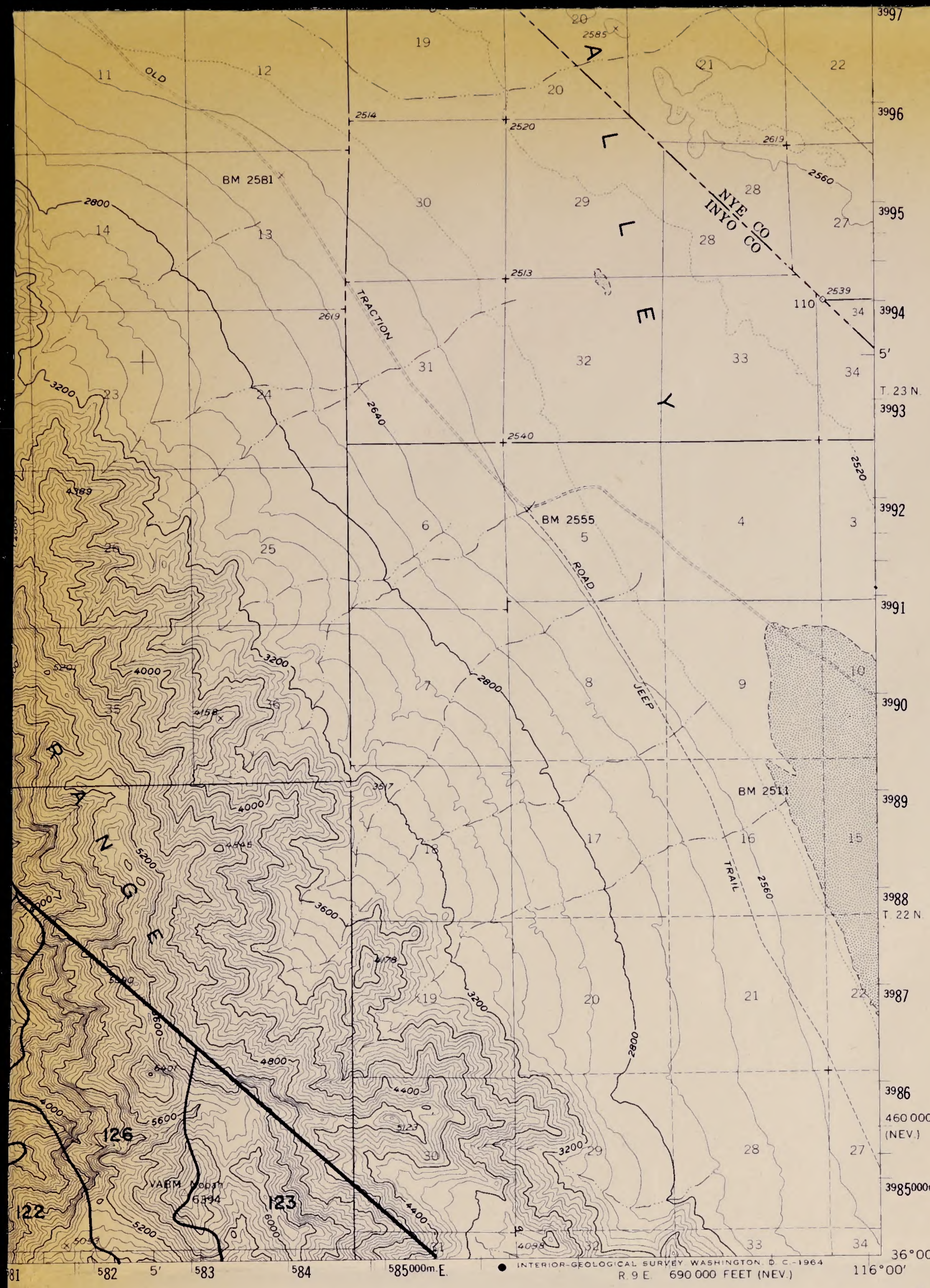
SCALE 1:62500



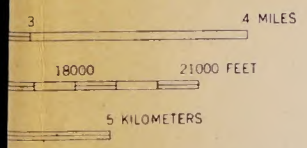
CONTOUR INTERVAL 80 FEET
DOTTED LINES REPRESENT 40-FOOT CON
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCUR

FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 25, COL
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS



(HORSE THIEF SPRINGS)
2855 IV



ROAD CLASSIFICATION

Medium-duty	▬ ▬ ▬	Light-duty	═══
Unimproved dirt	=======		
○	State Route		

QUADRANGLE LOCATION

SHINGTON 25, D. C.
REQUEST

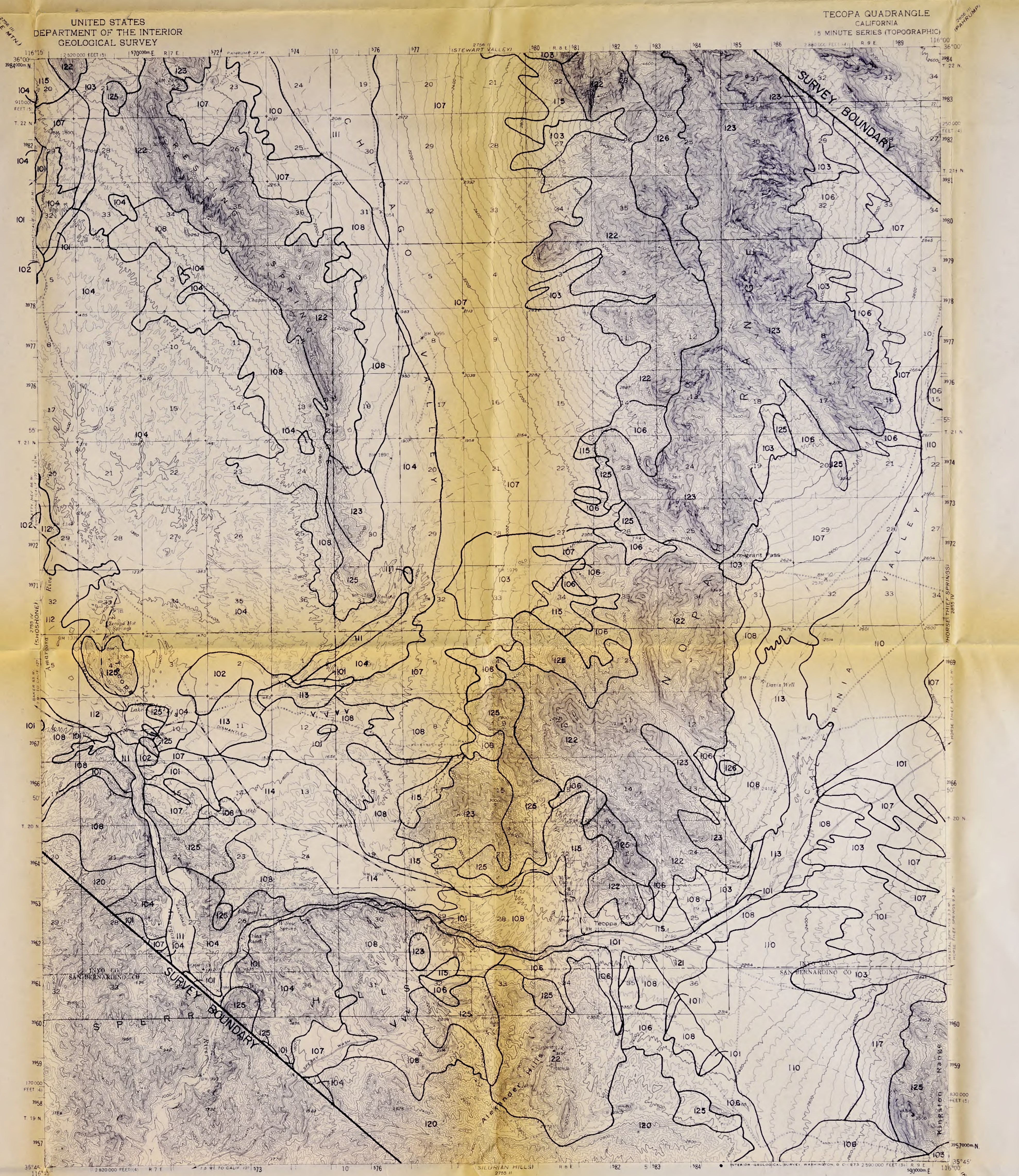
STEWART VALLEY, CALIF.–NEV.
N3600—W11600/15

1958

AMS 2756 II SERIES V795

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

TECOPA QUADRANGLE
CALIFORNIA
15 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

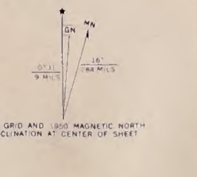
Topography from aerial photographs by multiplex methods
Aerial photographs taken 1946. Field check 1950

Polyconic projection. 1927 North American datum
10,000-foot grid based on California coordinate system, zones 4 and 5

Dashed land lines indicate approximate location

Unchecked elevations are shown in brown

1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue



UTM GRID AND 1950 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:62500

1 ½ 0 1 2 3 4 MILES

3000 0 3000 6000 9000 12000 15000 18000 21000 FEET

1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT HALF-INTERVAL CONTOURS
DATUM IS MEAN SEA LEVEL

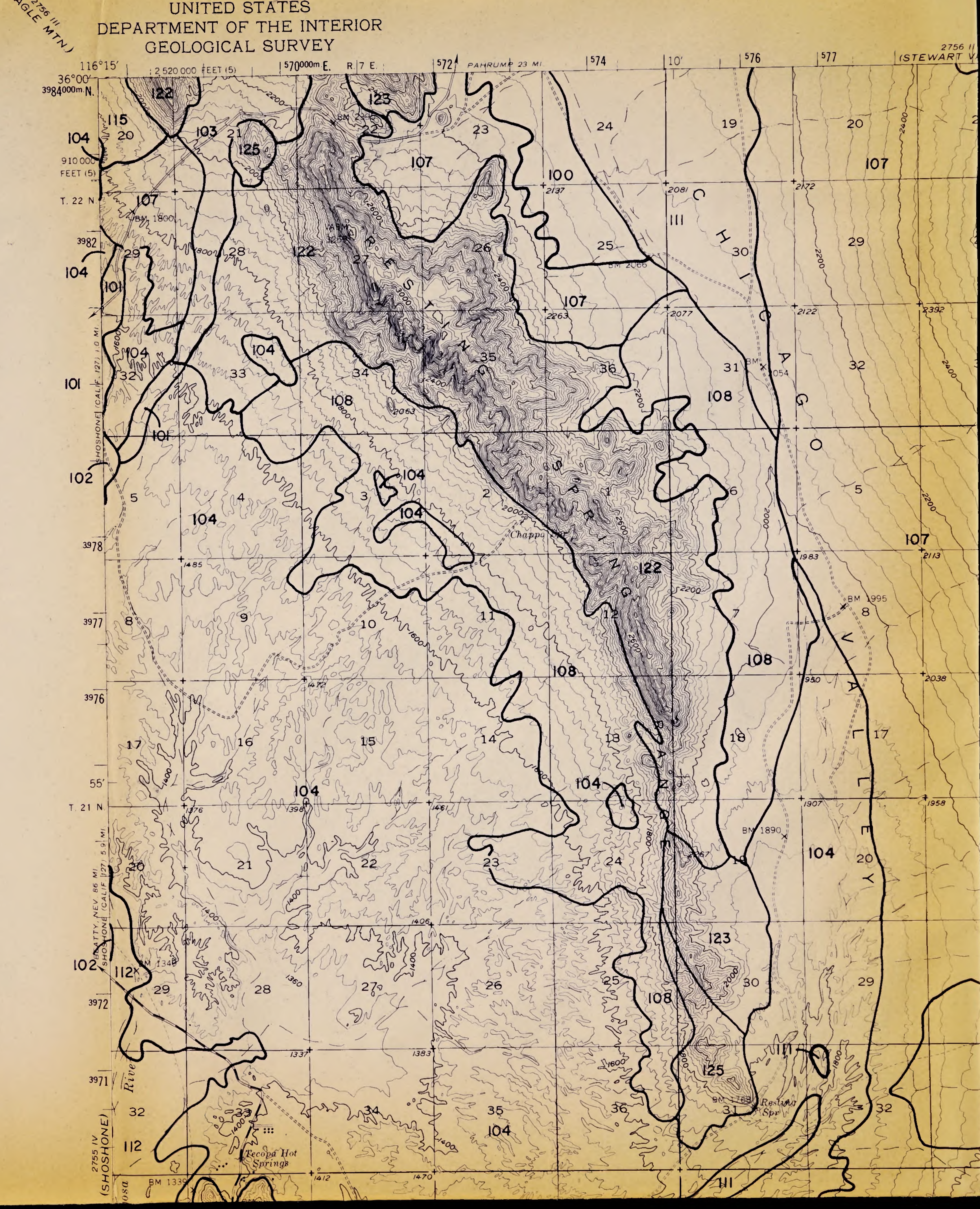
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

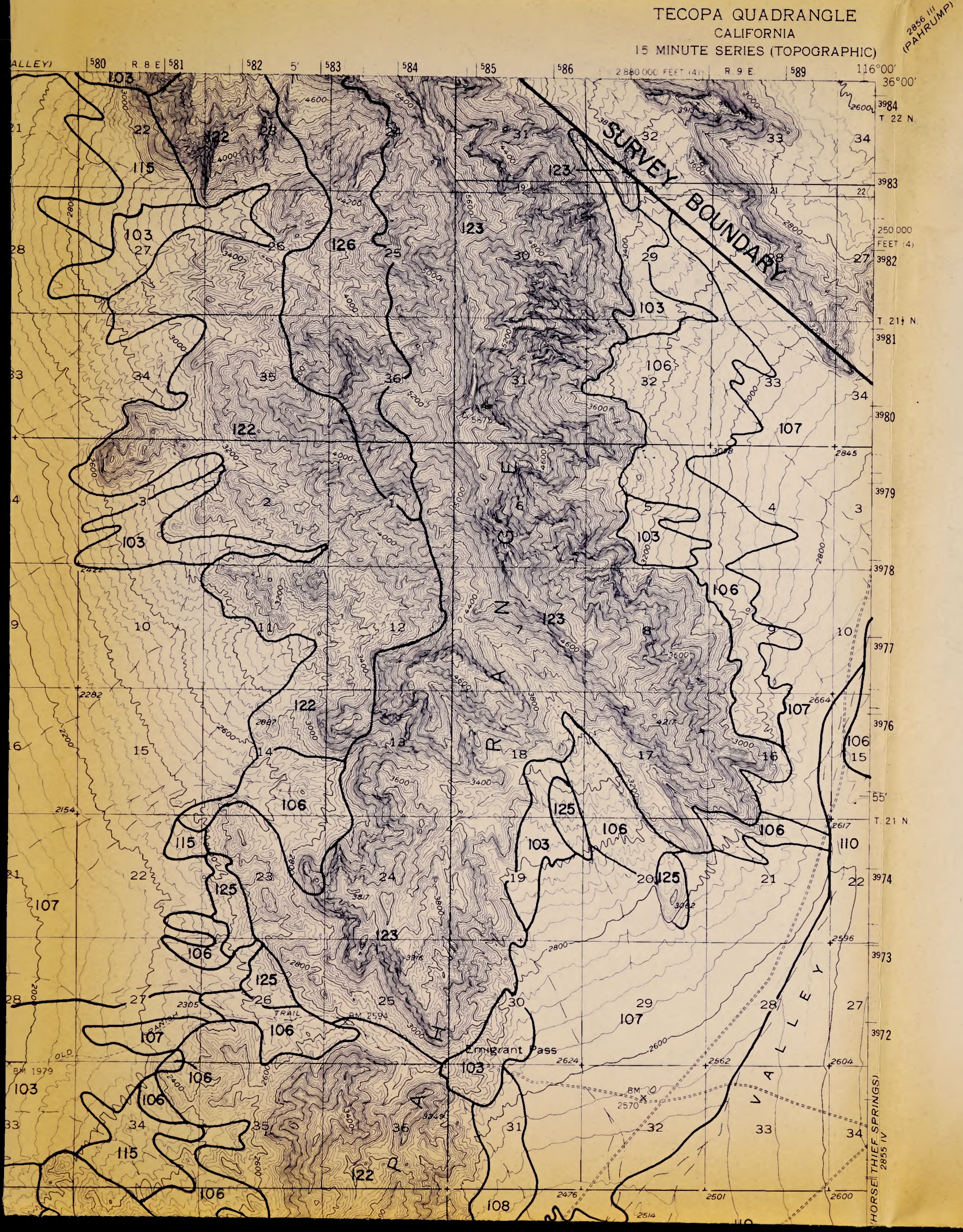
ROAD CLASSIFICATION

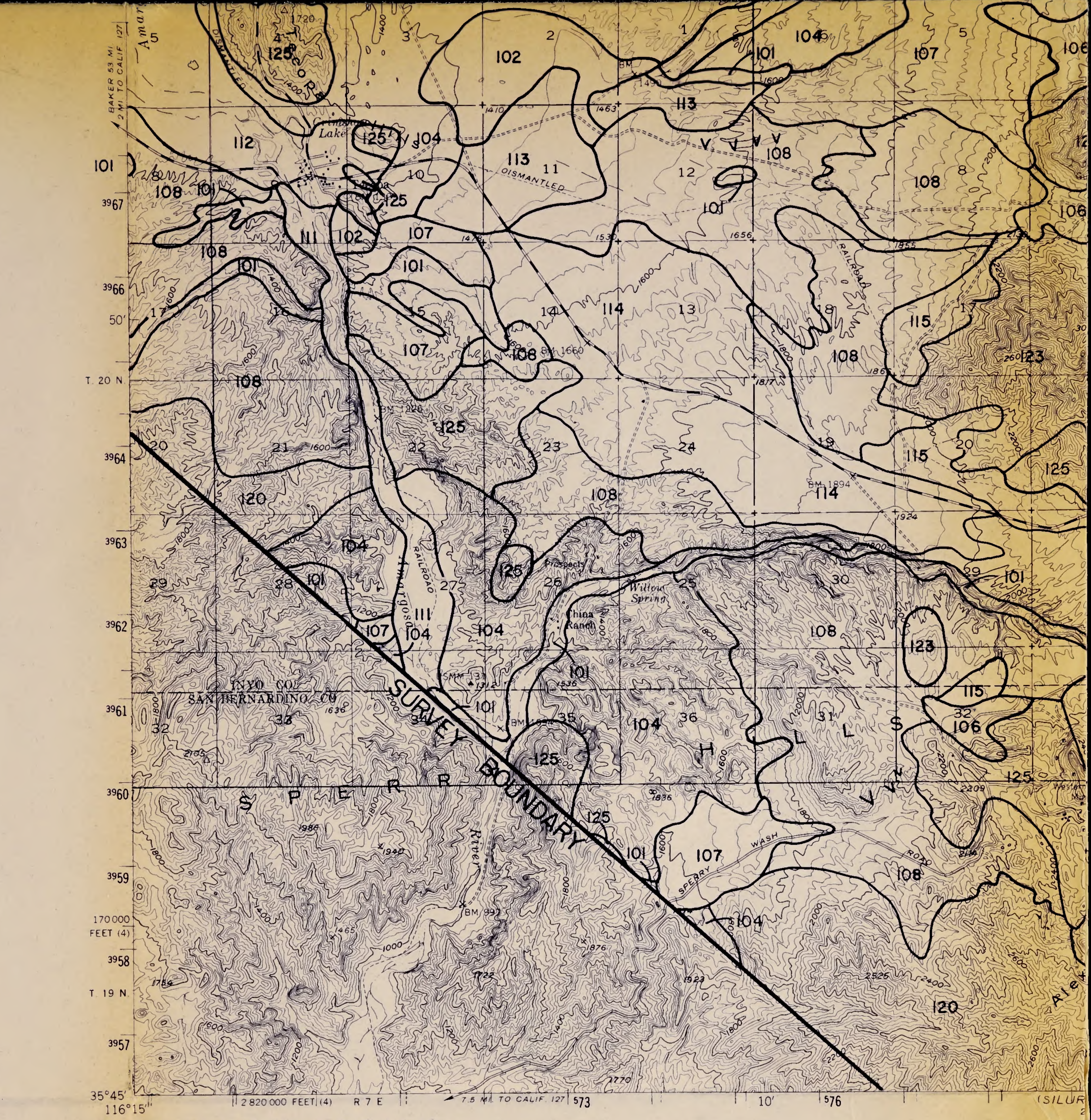
Heavy-duty ▬ 4 LANE | 6 LANE
Medium-duty ▬ 4 LANE | 6 LANE
Light-duty ═
Unimproved dirt ┈
U. S. Route
○ State Route

TECOPA, CALIF.
N3545—W11600/15
1950
AMS 2755 I—SERIES V795

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY




TECOPA QUADRANGLE
CALIFORNIA
15 MINUTE SERIES (TOPOGRAPHIC)
2856 III
(PAHRUMP)
116°00'
36°00'
R 8 E.
R 9 E.
2 880 000 FEET (4)
250 000 FEET (4)
T. 22 N.
T. 21½ N.
T. 21 N.
55'
SURVEY BOUNDARY
VALLEY
Emigrant Pass
TRAIL
OLD
BM 2594
BM 1979
BM 2570
(HORSE THIEF SPRINGS)
2855 IV
103
115
122
123
125
126
106
107
108
110



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

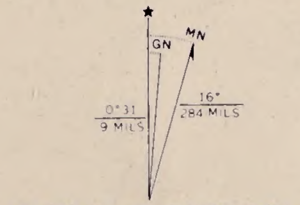
Topography from aerial photographs by multiplex methods
Aerial photographs taken 1946. Field check 1950

Polyconic projection. 1927 North American datum
10,000-foot grid based on California coordinate system,
zones 4 and 5

Dashed land lines indicate approximate location

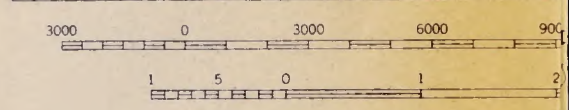
Unchecked elevations are shown in brown

1000-meter Universal Transverse Mercator grid ticks,
zone 11, shown in blue



UTM GRID AND 1950 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1



CONTOUR INTE

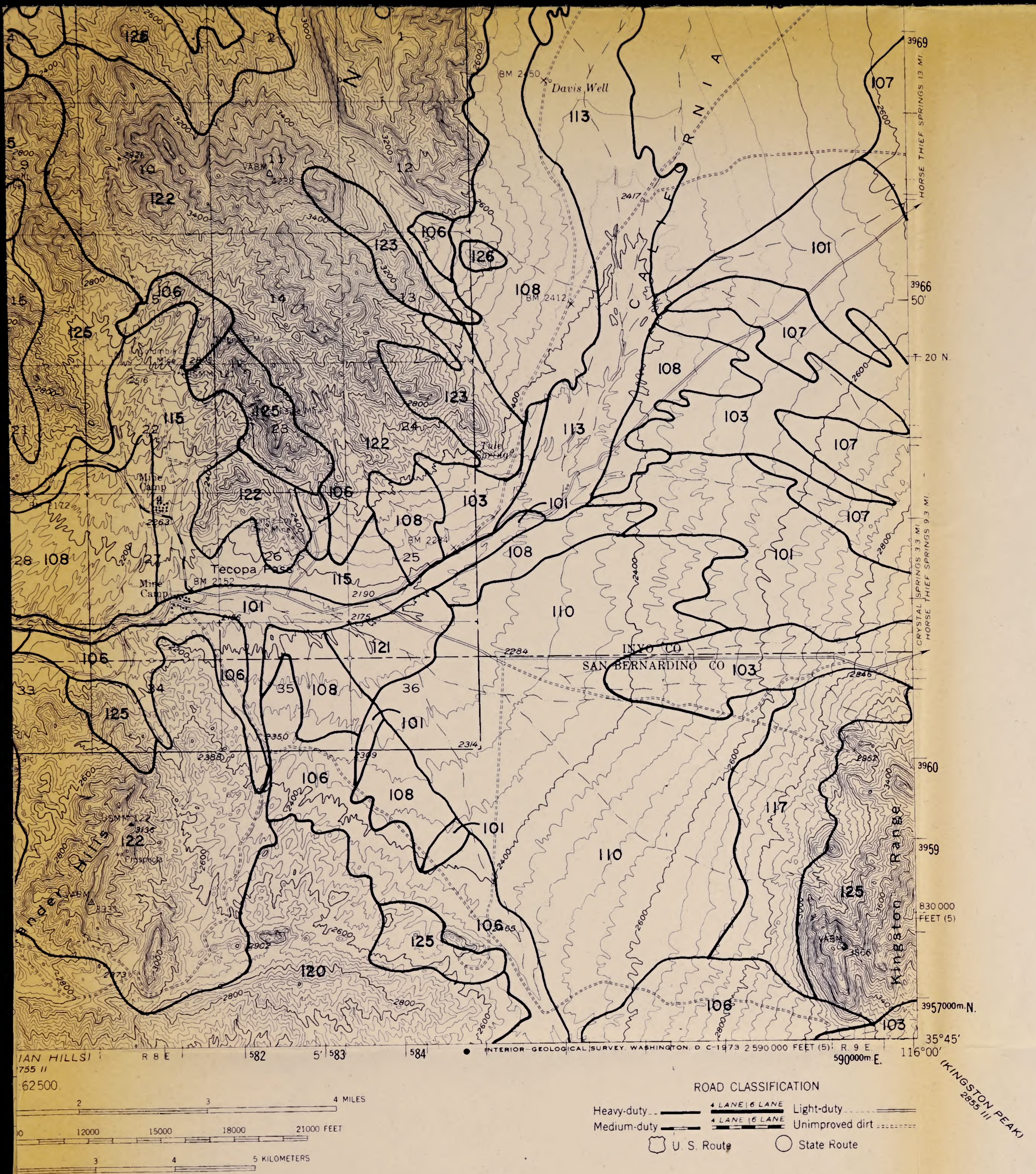
DOTTED LINES REPRESENT

DATUM IS MEA

THIS MAP COMPLIES WITH NATIO

FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVE

A FOLDER DESCRIBING TOPOGRAPHIC MAP



RVAL 40 FEET
HALF-INTERVAL CONTOURS
N SEA LEVEL

NAL MAP ACCURACY STANDARDS
R, COLORADO 80225 OR WASHINGTON, D. C. 20242
S AND SYMBOLS IS AVAILABLE ON REQUEST

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